#### U. S. DEPARTMENT OF LABOR

Occupational Safety and Health Administration

## MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

Shipbuilding, and S	hipbreakin	g (29 CFR 1915, 1916, 1917)	
	SEC1	ion I	
MANUFACTURER'S NAME		EMERGENCY TELEPHON	6660
ADDRECS (Number Street City Store and 710 Co	in, mo.		
CHEMICAL NAME AND SYNONYMS	<u>~,/,~.</u>	TRADE NAME AND SYNONYMS RAMCO CEMEL	)
CHEMICAL FAMILY A1.		FORMULA	
SECTIO	N II HAZA	ROOUS INGREDIENTS	
PAINTS, PRESERVATIVES, & SOLVENTS	% TLV (Units)	ALLOYS AND METALLIC COATINGS	% (Units)
PIGMENTS		BASE METAL	
GATALYST		ALLOYS	
VEHICLE	<b>†</b>	METALLIC COATINGS	
SOLVENTS		FILLER METAL PLUS COATING OR CORE FLUX	
ADDITIVES		OTHERS	
OTHERS LID ASBRITAS USED	DO TUD	CATED IN INSKEDIEN	<i>a</i>
		QUIDS, SOLIDS, OR GASES	TLV
	J. J. J. H. L. C.	lord, activity of oracle	? (Units)
A A STATE OF THE S			
	CTION JII	PHYSICAL DATA	
BOILING POINT (F.)	NA	SPECIFIC GRAVITY (H2O=1)	2.5
MELTING POINT	2200°F	PERCENT VOLATILE BY VOLUME (%)	NA
VAPOR DENSITY (AIR-1)	No	EVAPORATION RATE	NA
SOLUBILITY IN WATER	TRACE	31)	10
APPEARANCE AND ODOR GREV BR		MENT ODOR	
SECTION IV	FIRE AND E	XPLOSION HAZARD DATA	
FLASH POINT (Method used)		FLAMMABLE LIMITS Lei	Uel
EXTINGUISHING MEDIA			
SPECIAL FIRE FIGHTING PROCEDURES	U/A		
UNUSUAL FIRE AND EXPLOSION HAZARDS			
	<del></del>		

PAGE (1)

(Continued on reverse side)

Form OSHA-20 Rev. April 72

IRĖSHOLD LIMIT V	and the second of the second o	SECTION	Y HEAL	TH HAZARD DATA
	///			
ECTS OF OVEREX	NONE X	KNOWL	· wur	SANCE QUET SHOULD BE
		cces .	WITH	RESPIRATOR.
RGENCY AND FIR	FULLY	WITH	WATER	/ WEAR DUST RESPIRATOR
	<del></del>	SECTI		EACTIVITY DATA
ABILITY	UNSTABLE		CONDITION	S TO AVOID
· · · · · · · · · · · · · · · · · · ·	STABLE	YERRY		NONE KNOWN
OMPATABILITY /	Haterials to avoid)	Y APP	LICATION	0 Agunioum WITH FILISHILL COMOL
ZARDOUS DECOM	POSITION PRODUCTS			
ZARDOUS	MAY OCCUP	1		CONDITIONS TO AVOID
LYMERIZATION	WILL NOT O	CCUR		
<del></del>				
Mark House have a			N. C. C. C.	
Andreas de la companya de la company	Si	ECTION	VII SPILL	OR LEAK PROCEDURES
EPS TO BE TAKEN	IN CASE MATERIAL IS	RELEASED	OR SPILLED	
-				Acaum
, <del>, , , , , , , , , , , , , , , , , , </del>		wece-		
ASTE DISPOSAL M				
ASTE DISPOSAL M				MONAL METHOD
ASTE DISPOSAL M				
ASTE DISPOSAL M				
ASTE DISPOSAL M	ETHOD	ANY (	Convey	NONAL METHOD
ASTE DISPOSAL M	ETHOD	ANY (	Convey	
	ETHOD	ANY (	CONVEU SPECIAL I	NONAL METHOD
ESPIRATURY PROTI	ETHOD SECTION	DN VIII	SPECIAL I	PROTECTION INFORMATION
ESPIRATURY PROTI	SECTION (Specify type)	ON VIII  Bu	SPECIAL IF	PROTECTION INFORMATION  - MINES APPROVED  JOINTAN
ESPIRATORY PROTI	SECTION (Specify type)  LOCAL EXHAUST  MECHANICAL (Ge	ON VIII Bu	SPECIAL IF	PROTECTION INFORMATION  - MINES APPROVED  UDITIONS  OTHER  EXANT  EYE PROTECTION
SPIRATORY PROTI	SECTION (Specify type)  LOCAL EXHAUST:  MECHANICAL (Ge	ON VIII Bus	SPECIAL IT COL	PROTECTION INFORMATION  - MINES APPROVED  JOITIONS  OTHER  EYE PROTECTION  WHEN NEADED
ESPIRATORY PROTI	SECTION (Specify type)  LOCAL EXHAUST:  MECHANICAL (Ge	ON VIII Bus	SPECIAL IT COL	PROTECTION INFORMATION  - MINES APPROVED  UDITIONS  OTHER  EXANT  EYE PROTECTION
ESPIRATORY PROTI	SECTION (Specify type)  LOCAL EXHAUST:  MECHANICAL (Ge	ON VIII  Bus  neral)  eoed  ust re	SPECIAL IT CON WAN	PROTECTION INFORMATION  - MINES APPROVED  JOITIONS  OTHER  EYE PROTECTION  WHEN NEADED
VENTILATION PROTECTIVE GLOVI	SECTION (Specify type)  LOCAL EXHAUST:  MECHANICAL (Ge	ON VIII  Bus  neral)  COES  WET RE	SPECIAL IN CONTROL OF	PROTECTION INFORMATION  - MINES APPROVED  JOITTOUS  OTHER  EYE PROTECTION WHEN NEEDED
ESPIRATORY PROTI	SECTION (Specify type)  LOCAL EXHAUST  MECHANICAL (Ge  ES WHY WE  EQUIPMENT D	ON VIII  BUA  neral)  COES  WAT KE  SECTIO	SPECIAL IT THE CON WAN PERPURA ON IX SPE	PROTECTION INFORMATION  - MINES APPROVED  JAITIONS  OTHER  EYE PROTECTION WHEN NEEDED  CIAL PRECAUTIONS
ESPIRATORY PROTI	SECTION (Specify type)  LOCAL EXHAUST  MECHANICAL (Ge  ES  WHW NE  EQUIPMENT  D  STORE	ON VIII  BUA  neral)  COES  WAT KE  SECTIO	SPECIAL IN CONTROL OF	PROTECTION INFORMATION  - MINES APPROVED  JAITIONS  OTHER  EYE PROTECTION WHEN NEEDED  CIAL PRECAUTIONS

AGE (2)

Form OSHA-20 Rev. April 72

### 102505

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

# MATERIAL SAFETY DATA SHEET

and the first terms of the company	1 1		
Poc با درور ما مرور ساستا بیشته با ماساطا ساسه نمایان	quired under USDL Safety and H	colitis Deputations the Chief.	
TECTS OF CVERESPOSUA	Research animal control build to	sairii wadniatiout tot 20th Hi	spairing,
그 사람이 아내 사람이 하는 경우이 모임하는	The Chalanter Haller and the state of the	100 00m 4040 4444 444	
	Shipbuilding, and Shipbreskin	& (29 CFR 1915, 1916, 191)	7) trailanchas cookin
		B 1 = 2	to the case of the second terror of the second of

SECTION I	A STATE OF THE PROPERTY OF THE
MANUFACTURER'S NAME NILES CHEMICAL PAINT CO.	P DW TERM EMERGENCY TELEPHONE NO. 100 -200
Approprie (Number Serves City, Serves and 200 Co. Co.	T, NILES, MI 49120
CHEMICAL NAME AND SYNDNYMS	TRADE NAME AND SYNONYMS Part No. B 13019 gts. & B 13020 G
CHEMICAL FAMILY	A DATE-136 L. Compagnot with the gradient way
e die service de la companya de la c	

SECT	ION II HAZARDOUS INGREDI	ENTS
COMPATABILITY Williams to secure	PAINTS, PRESERVATIVES, & SOLVENTS	
AZARDOUS OECOMOS % BY WEIGHT , OTS		% BY VOLUME
PIGMENTS	COMPLEMENTAL TO A	END O
VEHICLES PORT O	And the second s	0
SOLVENTS 100		100
ADDITIVES		
PIGMENTS STORY	VII - SPILIBESINS AK PROCE	SHES SOLVENTS
रक्षेत्राक्षे इराज्यसम्बद्धाः स्टब्स्स्याकः	FALL HARLES DA CARLES CO.	Xylol 37.5%
osorbent #1	and the second s	Hi Flash VM&P 37.5%
	Analysis of the second of the second	SC 10025.0%
AND DESIGNATION METHOD	To second the description in	The state of the s
	and the second s	

SECT	TION III - P	HYSICAL DATA	
BOILING POINT (P.) BROTHONEVER US	3281 <sup>0</sup> €	SPECIFIC GRAVITY (H20=1)	.86'1
VAPOR PRESSURE (mm Hg.)		PERCENT, VOLATILE BY VOLUME (%)	100
VAPOR DENSITY (AIR-1) EXHAUST	41 41	EVAPORATION RATE (Butyl Acetain = 1	•75
SOLUBILITY IN WATER MANICAL Higherest	slicht	The second secon	
APPEARANCE AND ODOR	1	Section of the sectio	

F) AMMARLE LIMITS	Lei	Uel
LASH POINT (Method used) 80° F.	1.0	7.0
EXTINGUISHING MEDIA		
DECIAL FIRE FIGHTING PROCEDURES U O STream Spreads fire.		
MEA PAGE AUTHORS		
UNUSUAL RIRE AND EXPLOSION HAZARDS VA COTS ATE BERVIET THE ATT AND	Bernathan barn bein	

PAGE (1)

(Continued on reverse side)

Form OSHA-20

1802505

4 4 5	SECTION V . HEALTH HAZARD DATA
$\mathcal{J}$	ARESHOLD LIMIT VALUE 100 ppm (%) The same to the same
(	FFECTS OF EVEREYPOSUAR
	Can cause odorite tritical try of the cause involution of
E	MENGENCY AND FIRST AID PROCEDURES
	copious amounts of water. It swallowed do not induce vomiting call physician
	immediately. The subject of the subj

	3. day		SECTIO	N VI - RE	ACTIVIT	Y DATA			स्टार्ड्येक व्यक्ति	ing (K)
STABILITY	UNS	TABLE	#A.1	CONDITIONS	TO AVOID					100
	STA	BLE THE	Х							
INCOMPATABILITY		iels ic evoid)	a Str	ong Cxid:	izing Ag	ents		artjijen jiwa	alis this	
HAZARDOUS DECO	MPOSI		· + e							
HAZARDOUS					CONDITION	IS TO AVO	ЭID			
POLYMERIZATION		WILL NOT D	CCUR	3	1.0				<u> </u>	
e elikaraja je se s		artigati, ki ji disel	Part Free	The same Andrews						

	SECTION VII .	SPILL OR LE	AK PROC	EDURES	
STEPS TO BE TAKEN IN CASE	MATERIAL IS RELEA	SED OR SPILLED	Clean D	e seills	immediately with
absorbent material.		in we have a second			
The Rose of the Control of Control				· · · · · · · · · · · · · · ·	3000000000000000000000000000000000000
WASTE DISPOSAL METHOD	Pispece of sa	turated abso	rbent in	a certi:	Tied landfill.
		Berger Marke	a set to		and the second s
				·	

	SECTION VIII - SPECIAL PROTECTION INFORMATION	•
RESPIRATORY PRO	OTECTION (Specify type)	. 4
VENTILATION	Pruyide sufficient ventilation to maintain	: :
	MECHANICAL (General) exposure below the T. L.V.	
PROTECTIVE GLOV		•
OTHER PROTECTIV		

	SECTION IX - SPECIAL PRECAUTIONS	40°
PR	RECAUTIONS TO BE TAKEN IN HANDLING AND STORING Avoid rough handling and extreme heat.	71.1
)	Constitution of the first of the second	Ġů.
<b>-</b>	Containers of this material may be hezardous when empty.	
		134

Form OSHA-20

Form Approved OMB No. 44-R1387

## MATERIAL SAFETY DATA SHEET

9467K Series

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I							
MANUFACTURER'S NAME FLUORO-PLASTICS, INC.	EMERGENCY TELEPHONE NO. (215) 425-5500						
ADDRESS (Number, Street, City, State, and ZIP Code) G & VENANGO STS., PHILA, PA.	19134						
CHEMICAL NAME AND SYNONYMS TETRAFLUOROETHYLENE (TFE) FIBER	TRADE NAME AND SYNONYMS						
CHELLOROCARBON	FORMULACE 2n						

SECTION	11 -	HAZAF	DOUS INGREDIENTS		
PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	*	TLV (Units)
PIGMENTS THE POLYMER by weight	90		BASE METAL		
CATALYST			ALLOYS _		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Stabilizing Agent	5	Max	OTHERS		
OTHERS Residual acid ammonium	s	lts 1			
HAZARDOUS MIXTURES	OF (	OTHER LIC	DUIDS, SOLIDS, OR GASES	%	TLV (Units)
The ageueous dispersion of	of :	rfE pa	rticles is stabilized with		
Triton (ROHM & HAAS)					
		· · · · · · · · · · · · · · · · · · ·			

SECTION III - PHYSICAL DATA					
N.A					
N.A.					
N.A.					
•					

SE	CTION IV - FIRE	AND EX	(PLOSION HAZARD D	ATA	
FLASH POINT (Method used)	Does not fl	lash.	FLAMMABLE LIMITS	L.el	Uel
EXTINGUISHING MEDIA					
SPECIAL FIRE FIGHTING PRO TFE does not burn	cepures (rated 94 V-	O by U	//L) without an e	external s	ource of
fuel. In the even protection with fundamental fire and explosion	t of fire, ac	id res	istant clothing	and full	race
Dry TFE will burn					

PAGE (1)

(Continued on reverse side)

Form OSHA-20 Rev. May 72

McMASTER-CARR PART # 9467 KI

	PÉCLION	V - HEA	LTH HAZARD	DAIA		
TVALUE		<del> </del>			· · · · · · · · · · · · · · · · · · ·	
r when th		decompo	sed, may o	ause polymer	fume, fev	er,
<b>_</b>				·		
Remove	to fresh	air. F	Refer to ph	ysician for t	treatment.	
	with wat	er for	at least 1	5 minutes: re	efer to	
					í	
		····				
	SECTIO	N VI - R	EACTIVITY D	ATA	-	
UNSTABLE						
STABLE						ate
i		venti.	lation shou	ild be avoided	1.	
OMBOSITION BB	DUCTE	· · · · · · · · · · · · · · · · · · ·				
	·		T	<u> </u>		
1	CUR	,	CONDITIONS T	O AVOID		
	OT OCCUR	XX				
roducts by state and	alkalin federal	e scrul	bbing. Dispations.	ombustion and bosal methods	removal o	f
state and	alkalin federal	regul	bbing. Dispations. PROTECTION	INFORMATION	removal o	f
roducts by state and	alkalin federal	regul	bbing. Dispations.	INFORMATION	removal o	f
state and	alkalin federal ON VIII - S	regul	bbing. Dispations. PROTECTION	INFORMATION	removal o	f orm
SECTION (Spec	alkalin federal ON VIII - S	regul	bbing. Dispations. PROTECTION	INFORMATION	removal o	form
SECTION (Spec	alkalin federal ON VIII - S	regul	bbing. Dispations. PROTECTION	INFORMATION Eion. SPECIAL OTHER	removal o	f
SECTION (Spec	alkalin federal ON VIII - S	regul	PROTECTION	INFORMATION Eion. SPECIAL OTHER	removal o	form
SECTION (Spec	alkalin federal  ON VIII - S  ify type)  UST  (General)	regula SPECIAL	PROTECTION	INFORMATION Eion. SPECIAL OTHER	removal o	f
SECTION (Specification)  LOCAL EXHAUSTER  MECHANICAL  IVES  IVE EQUIPMENT	alkalin federal ON VIII - S ify type) UST (General) N.A. SECTION	SPECIAL Adequa	PROTECTION te ventila  EYE PROTECTI  ECIAL PRECAL temperatu	INFORMATION Eion. SPECIAL OTHER	must conf	orm
SECTION (Specific EXHAUST)  LOCAL EXHAUST  MECHANICAL  VES  VE EQUIPMENT  LETTAKE DENE	alkalin federal ON VIII - S ify type) UST (General) N.A. SECTION	POTRINA	PROTECTION te ventila  EYE PROTECT  ECIAL PRECAL temperatu	INFORMATION Eion. SPECIAL OTHER ON  JTIONS res - above 4	must conf	nay
SECTION (Specification)  LOCAL EXHAUSTER  MECHANICAL  VES  VE EQUIPMENT  LEGITAGENEN  LOCAL EXHAUSTER  MECHANICAL  MECHANICAL  LOCAL EXHAUSTER  LOCAL EXHAUSTE	alkalin federal  ON VIII - S  i(y type) UST .(General)  N.A.  SECTION (XSUSSECTION) OTECTIVE	PSTMINE	PROTECTION te ventila  EYE PROTECTI  ECIAL PRECAL temperatu	INFORMATION LION. SPECIAL OTHER ON	50°F gas m	nay
	UNSTABLE STABLE STABLE STABLE WHEN MAY OF MA	REXPOSURE ET When thermally like symptoms.  If I Remove to fresh it: Flush with wat section with wat section with wat section products  MAY OCCUR  WILL NOT OCCUR	REXPOSURE OF When thermally decomposite when thermally decomposite with the symptoms.  SECTION VI - From the state of the	SECTION VI - SPILL OR LEAK PRO	SECTION VI - REACTIVITY DATA  UNSTABLE STABLE STABLE STABLE STABLE V (Materials to avoid)  OMPOSITION PRODUCTS  MAY OCCUR  MAY OCCUR  SECTION VI - SPILL OR LEAK PROCEDURES	REXPOSURE PRO WHEN THE THE PROCEDURES AND THE PROCESS AND THE PROCEDURES AND THE PROCESS AND THE P

Form OSHA-20

Air Products and Chemicals, Inc. Box 538, Allentown, PA 18105 Tel. (215) 481-4911 - TWX 510-651-3686 CABLE-AIRPROD - TELEX 84-7416



Industrial Gas Division

Nitrogen
Material Safety
Data Sheet

EMERGENCY PHONE: 800—523-9374 IN PENNSYLVANIA. 800—322-9092	TRADE NAME AND SYNONYMS Nitrogen, LIN (Liquid only)	CHEMICAL NAME AND SYNONYMS Nitrogen
ISSUE DATE ISSUED: 13 April 1977 AND REVISIONS Rev: 24 August 1982	FORMULA N <sub>2</sub> MW: 28.01	CHEMICAL FAMILY Inert gas

#### **HEALTH HAZARD DATA** THRESHOLD LIMIT VALUE Nitrogen is a simple asphyxiant and has no threshold limit value (TLV). SYMPTOMS IF INGESTED, CONTACTED WITH SKIN, OR VAPOR INHALED Nitrogen is odorless and nontoxic, but may produce suffocation by diluting the concentration of oxygen in air below levels necessary to support life. PERSONNEL, INCLUDING RESCUE WORKERS, SHOULD NOT ENTER AREAS WHERE THE OX-YGEN CONCENTRATION IS BELOW 19%, UNLESS PROVIDED WITH A SELF-CONTAINED BREATHING APPARATUS OR AIR-LINE RESPIRATOR. Exposure to oxygen-deficient atmospheres may produce dizziness, nausea, vomiting, loss of consciousness, and death. Death may result from errors in judgement, confusion, or loss of consciousness which prevents selfrescue. At low oxygen concentrations unconsciousness and death may occur in seconds without warning. Extensive tissue damage or burns can result from exposure to liquid nitrogen or cold nitrogen vapors. TOXICOLOGICAL PROPERTIES Nitrogen is a simple asphyxiant and constitutes 79% of the air we breathe. Nitrogen does not support life and may produce immediately hazardous atmospheres through the displacement of oxygen. Nitrogen under high pressure can produce narcosis even though oxygen sufficient for life is present. RECOMMENDED FIRST AID TREATMENT Persons suffering from lack of oxygen should be moved to areas with normal atmospheres. SELF-CONTAINED BREATHING APPARATUS MAY BE REQUIRED TO PREVENT ASPHYXIATION OF RESCUE WORKERS. Assisted respiration and supplemental oxygen should be given if the victim is not breathing. If cryogenic liquid or cold boil-off gas contacts a worker's skin or eyes, frozen tissues should be flooded or soaked with tepid water (105-115F; 41-46C). DO NOT USE HOT WATER, Cryogenic burns which result in blistering or deeper tissue freezing should be seen promptly by a physician. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) N/A	AUTO IGNITION TE	MP FLAMMABLE LIMITS N/A	LEL N/A	N/A
EXTINGUISHING MEDIA			ELECTRICAL CLASSIFI GROUP N/A	CATION
SPECIAL FIRE FIGHTING PROCEDURES N/A			·	
UNUSUAL FIRE AND EXPLOSION HAZARD	s		- Vin-	
	PHYS	ICAL DATA		
BOILING POINT (*F.) @ 1 atm320.5F (-195.8C)		FREEZING POINT (*F.) @ 1 atm -346.0F (-210.0C)		· · · · · · · · · · · · · · · · · · ·
VAPOR PRESSURE (psia) N/A		solubility in Water @ 68F (20C), 1 atm 1.52% b	y volume	
VAPOR DENSITY (lb/cu fi) @ 68F (20C), 1 atm 0.07273	SPECIFIC GRAVITY (AIR = 1) @ 68F (20C), 1 atm 0.967	LIQUID DENSITY (th/cu tt)  @ boiling point, 1 atm 50.45	SPECIFIC GRAVITY (	H <sub>1</sub> 0 = 1) nt, 1 atm 0.808
APPEARANCE AND ODOR Both liquid and gaseous nitre	ogen are colorless and odorle	SS.		

#### DISCLAIMER

Information contained in this data sheet is offered without charge for use by technically qualified personnel at their discretion and risk. All statements, technical information and recommendations contained herein are based on tests and data which we believe to be reliable, but the accuracy or completeness thereof is not guaranteed and no warranty of any kind is made with respect thereto. This information is not intended as a license to operate under or a recommendation to practice or infringe any patent of this Company or others covering any process, composition of matter or use.

Since the Company shall have no control of the use of the product described herein, the Company assumes no liability for loss or damage incurred from the proper or improper use of such product.

				REACTIVITY DATA	
STABILITY	UNSTAI	3LE		CONDITIONS TO AVOID	
Inert	STABLE		X	None	
INCOMPATIBILITY (Materials to None	avoid)				
hazardous decomposition None	PRODUC	TS			
HAZARDOB's POLYMERSZATION	MAYO	CUR		CONDITIONS TO AVOID	
	WILLN	OT OCCUR	Х	None	
				SPILL OR LEAK PROCE	DURES
enclosed areas to pr release of gaseous n WASTE DISPOSAL METHOD	with li event f itroger	quid nitro ormation i.	of oxy	r its cold boil-off gas. Flush lli ygen-deficient atmospheres c	quid nitrogen spill with water to disperse. Ventilate aused by the evaporation of liquid nitrogen or the mote from work areas. Vent nitrogen gas slowly to a
well ventilated outdo	or loca	tion remo to Air Pro	te fror ducts	n work areas. Do not attempt with residual pressure, the cy	to dispose of residual nitrogen in compressed gas linder valve tightly closed and valve caps in place.
			SPE	CIAL PROTECTION INFO	DRMATION
result in asphyxiation	reathir	g appara		oxygen-deficient atmosphere	s. Caution! Respirators will not function. Use may
ventilation Natural or mechanics	al	LOCAL EXHA			SPECIAL
where gas is present		MECHANICA	L (Genera	10	OTHER  Vents should be situated to avoid higher than normal concentration of nitrogen in work areas.
compressed gas cyli		f imperme	eable r	naterials such as leather. Lea	ther work gloves are recommended when handling
EYE PROTECTION (LIN) Chemical goggiother Protective Equipme		afety gla	sses. 5	Safety glasses are recommend	ded when handling high-pressure cylinders.
None				SPECIAL PRECAUTIO	NS*
FLAMMABLE GAS"	must label. (	Consult D		nce with Department of Tra	insportation (DOT) regulations using DOT "NON-ipping of hazardous materials.
only in well ventilate with care. Use a pres Secure cylinders wh flow into storage cor For additional handli	quid ni d area ssure-re en in u ntainer ing rec	trogen or e s. Compre educing re se. Never . Avoid dr ommenda	essed ( egulato use di agging	gas cylinders contain nitroger or and pressure relief devices irect flame to heat a compress g, rolling, or sliding cylinders, o	Prevent entrapment of liquid in closed systems. Use at extremely high pressure and should be handled when connecting to lower pressure piping systems, sed gas cylinder. Use a check valve to prevent back even for a short distance. Use a suitable hand truck, consult Compressed Gas Association Pamphlet P-1.
be in heavy traffic ar main on cylinders no material. Replace th chemicals are prese	ers and eas to ot conr ie cylin nt. See	cylinders prevent an nected for ider cap v Compres	cciden ruse. S when t	tal knocking over or damage f Segregate full and empty cyli he cylinder is not in use. Avo	ders away from sources of heat. Storage should not rom passing or falling objects. Valve caps should renders, Storage areas should be free of combustible old exposure to areas where salt or other corrosive for additional storage recommendations.
nitrogen is stored in	ontaine vacuu	ers meet E m-insulat	OOT sp ed con	pecifications or American Soc stainers meeting DOT specific	iety of Mechanical Engineers (ASME) codes. Liquid ations or ASME codes.
temperatures. Avoid cylinders should not filled without the per	a cryog Luse o De ref rmissio	jenic liqu f carbon illed exce on of the o	steel a pt by c wner i	and other materials which be qualified producers of compre-	be selected for compatibility with extremely low come brittle at low temperatures. Compressed gas ssed gases. Shipment of a compressed gas cylinder oxygen-deficient atmospheres are suspected or can mospheres.

\*Various Government agencies (i.e., Department of Transportation, Occupational Safety and Health Administration, Food and Drug Administration and others) may have specific regulations concerning the transportation handling, storage or use of this product which will not be reflected in this data sheet. The customer should review these regulations to ensure that he is in full compliance.



#### North American Refractories Co.

WESTERN DIVISION



BRAND: SUPER TENAX

ASTM CLASS: SUPER-DUTY 2910°F

TYPE: WET, AIR SET

PCE: 34-35

DESCRIPTION: High quality air-set mortar with good resistance

to iron oxide attack.

#### APPLICATION DATA:

Amount required per 1000 bricks, lbs. (Approx.): 450

Dried Bond Strength at 220°F. psi : 400-600

Particle Sizing +35 mesh: 0-5

-100 mesh: --

Water required for 'trowelling, qts/100 lb : As supplied

Water required for dipping, qts/100 lb : 3-4 additional

#### CHEMICAL DATA:

Alumina (Al <sub>2</sub> O <sub>3</sub> )	49.6	%
Silica (SiO₂)	47.0	%
Titania (TiO₂)	0.7	%
Ferric Oxide (Fe₂O₃)	0.5	%
Lime (CaO) + Magnesia (MgO)	Tr	%
Alkalies (Na <sub>2</sub> O, K <sub>2</sub> O)	2.3	%
Phosphorous Pentoxide (P2O5)		%
Other		%

### MATERIAL SAFETY DATA SHEET - Prepared occording

to the OSHA Hazard Communication Standard (29 CFR 1910.1200).

FUEL PROCESSORS INC. & OIL RE-REFINING CO. CUTTER STOCK #1993

DANGER!

HARMFUL OR FATAL IF SWALLOWED PROLONGED OR REPEATED CONTACT WITH SKIN CAN BE HARMFUL COMBUSTIBLE

KEEP OUT OF REACH OF CHILDREN!

TYPICAL COMPOSITION: A mixture of petroleum residuals & Cutter Stocks blended to meet specifications.

EXPOSURE STANDARD: No Federal OSHA exposure standard of ACGIH TLV has been established for this material. However, due to possible carcinogenic effects, exposure should be reduced to the lowest feasible level. This product may emit hydrogen sulfide (H<sub>2</sub>S). The Federal OSHA exposure standard for hydrogen Sulfide (H<sub>2</sub>S) is 20 ppm (a ceiling value). It may be exceeded (up to 50 ppm) for 10 minutes in any 8-hour period in which no other measurable exposure occurs. The ACGIH (1985-86) TLV is 10 ppm (8-hour time weighted average).

#### PHYSIOLOGICAL & HEALTH EFFECTS

· 新國歌語明 45

#### EMERGENCY & FIRST AID PROCEDURES

Expected to cause no more than minor eye irritation.

EYES

Flush eyes immediately with fresh water for at least 15 minutes while holding the eye lids open. If the irritation persists, see a doctor.

Skin

Expected to cause no more than minor skin irritation, but prolonged or frequently repeated skin contact may be harmful. See Additional Health Data.

Remove contaminated clothing. Wash skin throughly with soap & water. See a doctor if irritation occurs. Launder contaminated clothing.

Not expected to be acutely toxic by inhalation. See Additional Health Data.

INHALATION

Since this material is not expected to be an acute inhalation problem, no first aid procedures are required.

INCESTION

Not expected to cause acute systemic toxicity by ingestion. Note to Physician: ingestion of this product or subsequent vomiting can result in aspiration of light hydrocarbon liquid which can cause pneumonitis.

If swallowed give water or milk to drink and telephone for medical advice. DO NOT make person vomit unless directed to do so by medical personnel. If medical advice cannot be obtained take person and product container to the nearest medical emergency treatment center or hospital.

#### SPECIAL PROTECTIVE INFORMATION

Eye Protection: No special eye protection is necessary. Skin Protection: Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by: wearing impervious protective clothing including gloves. Respiratory Protection: No special respiratory protection is normal However, if operating conditions create high air-borne concentrations, use of aп approved respirator recommended. Note: If any of the applicable HoS standards are likely to be exceeded, positive supplied-air respiratory protection must be used.

Use this material only in well ventilated areas. Ventilation:

Liquid evaporates and forms vapor (fumes) which FIRE PROTECTION: can catch fire & burn with explosive violence. - Invisible vapor spreads easily and can be set on fire by many sources such as pilot welding equipment, and electrical motors and switches. Fire hazard is greater as liquid temperature rises about 85°F. Flash Point: (P-M) 100°F. Min. Normal 210°F billings - Pundul. Extinguishing Media: CO, Dry Chemical, Foam Water Fog. Special Fire Fighting Procedures: For fires invo involving material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus. See Hazardous Decomposition Products. Read the entire SPECIAL PRECAUTIONS: See page 3.

#### ENVIRONMENTAL PROTECTION

The second of th

Environmental Impact: This material is considered to be a water pollutant and should be kept out of sewage and drainage systems and all bodies of water.

Precautions if Material is Released or Spilled: - Eliminate all open flame in vicinity of spill or released vapor. Stop the source of the leak or realease. Clean up releases as soon as possible, observing precautions in Special Protective Information. liquid to prevent further contamination of soil, surface water or Clean up small spills using appropriate techniques groundwater. Where feasible and sorbent materials or pumping. appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

Waste Disposal Methods: Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

#### REACTIVITY DATA

Stability (thermal, light, etc.): Stable.

Incompatibility (Materials to avoid): May react with strong

oxidizing materials.

Decomposition Products: Normal combustion forms of Hazardous carbon dioxide and water vapor and may produce oxides of sulfur. Incomplete combustion can produce carbon monoxide.

Hazardous Polymerization: Will not occur.

PHYSICAL PROPERTIES: Solubility: Incoluble in water; miscible with hydrocarbons. Appearance (color, odor, etc.): Black liquid. Specific Gravity: 20 to 28

Viscosity: 220 to 250 %Sulfur: Under .096. Pour Point: +20°F.

#### ADDITIONAL HEALTH DATA:

This material is of varying composition and may contain significant amounts of polynuclear aromatic hydrocarbons (PNAs) which have been shown to cause skin cancer after prolonged or frequent contact with the skin of test animals. When a similar material was repeatedly applied to the skin of mice, there was a moderate increase in skin cancer. We strongly recommend that the precautions outlined in this MSDS be followed to reduce skin contact and inhalation of mists or vapors to a minimum.

#### SPECIAL PRECAUTIONS:

DO NOT USE OR STORE near flame, sparks or hot surfaces. USE ONLY IN A WELL VENTILATED AREA. Keep container closed. DO NOT wold, heat or drill container. Replace cap or bung. Emptied container still contains hazardous or explosive vapor or liquid.

Toxic quantities of hydrogen sulfide (H<sub>2</sub>S) may be present in storage tanks and bulk transport vessels which contain or have contained fuel oil. Persons opening or entering these compartments should first determine if H<sub>2</sub>S is present. See Special Protective Information. As an indicator of H<sub>2</sub>S concentration, the rotten eggs odor is unreliable because it may be masked by other odors. Therefore, DO NOT ATTEMPT RESCUE WITHOUT WEARING APPROVED SUPPLIED-AIR OR SELF CONTAINED BREATHING EQUIPMENT.

a

Document .MIS 4-1

#### MATERIAL SAFETY DATA SHEET

#### Section I Product Identification

Manufacturer: High-Temp Northwest
Address: 9438 S.W. Tigard St. P.O. Box 23936 Tigard, Oregon 97223
Emergency Telephone Number: (503) 684-3920
Trade Name and Synonyms: Fiber Cement. Stove or Furnace Adhesive:

#### Section II Physical Data

Appearance and Odor: Black viscous semi-liquid. Odorless. Specific Gravity (H2O=1): 2.3 - 2.7 Solubility in Water: Complete. Vapor Pressure (mm Hg.): N/A Boiling Point: N/A Vapor Density (Air=1): N/A Evaporation Rate: N/A

#### Section III Fire and Explosion Hazard Data

Flash Point: N/A
Flammable Limits (vapor in air, vol.%): N/A
Fire Extinguishing Media: N/A
Special Fire Fighting Procedures: N/A
Unusual Fire and Explosion Hazards: N/A

#### Section IV Health Hazard Data

Hazard of Material as Manufactured: N/A
Hazard of Material after Normal use: This product contains calcium
metasilicate and silicic acid. Removal of the material after use
may generate dust containing free crystalline silica. Prolonged
inhalation of this material may cause delayed lung injury
(silicosis). The recommended TLV/PEL for free crystalline silica
is based on the following formula:

10mg/cu m 1/2(-----) % resp. quartz +2

#### Section V Special Precautions

Precautions to be taken after use and upon removal: Avoid contact with eyes and skin. Wash thoroughly after handling. In case of eye contact, flush with plenty of water for at least 15 minutes. Consult a physician immediately!



**PRODUCT** 

CHEMICAL/

**SYNONYMS** 

CHEMICAL

FAMILY

SHELL CODE

## MATERIAL SAFET DATA SHEET

MSDS NUMBER ▶ 52,366

PAGE 1 OF 4

97002 (1-81) SECTION I NAME

Residual Fuel

Hydrocarbon

40040

▶ Shell Industrial Fuel Oil-NW

C.A.S. NUMBER

24 HOUR EMERGENCY ASSISTANCE 713-473-9461 L HEALTH CHEMTREC 800-424-9300 HAZARD RATING FIRE 2 LEAST SLIGHT 0 0 MODERATE HIGH EXTREME

3

COMPOSITION	%	TOXICITY DATA
nell Industrial Fuel Oil-NW	100	Not Determined
		•

#### SECTION III HEALTH INFORMATION

WARNING - Hydrogen sulfide (H2S) and other hazardous vapors may evolve and collect in the headspace of storage tanks or other enclosed vessels. Hydrogen sulfide is an extremely flammable, highly toxic gas. (See Sec. IX).

Exposure to vapors or mist of this product may cause pulmonary irritation, dizziness and nausea. Prolonged or repeated contact may cause various skin disorders such as dermatitis, folliculitis or oil acne.

The petroleum hydrocarbons in this product are a complex mixture of paraffinic, naphthenic and aromatic hydrocarbons. As in other petroleum oils, the aromatics contain polycyclic compounds of various concentrations and Some of these polycyclics may be those which have been shown structures. to induce cancer in animals under laboratory conditions. Epidemiologic studies on other petroleum products containing polycyclic aromatics suggested the possibility of skin cancer induction in man after prolonged and repeated contact. Inhalation of mists arising from oils containing these materials may also present a cancer hazard.

This specific product has not been tested in long-term, chronic exposure tests. Therefore, the presence of polycyclic aromatic hydrocarbons requires that handling procedures and safety precautions in this MSDS be

followed to minimize employees' exposure. SECTION IV OCCUPATIONAL EXPOSURE LIMITS

Particulate (mist) polycyclic aromatic hydrocarbons, as benzene solubles:

 $ACGIH-TLV/TWA = 0.2 mg/m^3$ Hydrogen Sulfide: ACGIH TWA/TLV = 10 ppm; STEL = 15 ppm



SKIN CONTACT:

### MATERIAL SAFETY DATA SHEET

GDS NUMBER 🕨

52,366 PAGE 2 OF 4

SECTION V EMERGENCY AND FIRST AID PROCEDURES

Flush with water. Follow by washing with soap and water.

Remove contaminated clothing and do not reuse until

laundered. If irritation persists, get medical attention.

INHALATION: Remove victim to fresh air and provide oxygen if breathing

is difficult. Give artificial respiration if not breathing.

Get medical attention.

EYE CONTACT: Flush with water for 15 minutes while holding eyelids open.

Get medical attention.

INGESTION: Do not induce vomiting. In general, no treatment is

necessary unless large quantities of product are ingested.

However, get medical advice.\*

\*NOTE TO THE PHYSICIAN: In general, emesis induction is unnecessary in high viscosity, low volatility products, i.e. most oils and greases.

BOILING POINT (*F)	•	450-1000+	MELTING POINT	>	Pour Pt.<50	VAPOR PRESSURE (mmHg)	<b>&gt;</b>	Negligible
SPECIFIC GRAVITY (H <sub>2</sub> 0=1)	•	1.041-1.044	% VOLATILE BY VOLUME	>	N.A.	VAPOR DENSITY (AIR=1)	•	N.A.
SOLUBILITY IN WATER	Þ	Negligible	EVAPORATION RATE (BUTYL ACETATE= 1)	•	Negligible	N.A. =	ΝО	t Available

Black oil. Distinct petroleum odor.

SECTION VII FIRE AND EXPLO	SION HAZARDS		
FLASH POINT AND METHOD USED	FLAMMABLE LIMITS/% VOLUME IN AIR.	LOWER	UPPER
150°F PMCC (min): 225°F (typical)		N.A.	N.A.
EXTINGUISHING MEDIA			

Use water fog, foam, dry chemical or CO2. Do not use a straight stream will float and can be reignited on surface of water Product SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS

Do not enter confined fire space without proper protective equipment including a NIOSH approved self-contained breathing apparatus. Cool fire-exposed containers with water.

UNUSUAL FIRE AND EXPLOSION HAZARDS

None unusual.

## MATERIAL SAFETY DATA SHEET

97004 (10-79)		PAGE 3 OF 4
SECTION VIII	REACTIVITY	
STABILITY UNSTABLE X STABLE	HAZARDOUS POLYMERIZATION	MAY OCCUR X WILL NOT OCCUR
CONDITIONS AND MATERIALS TO AVOID		
Avoid heat, open flames and s	strong oxidizing agents.	
	· · · · · · · · · · · · · · · · · · ·	
HAZARDOUS DECOMPOSITION PRODUCTS		
Carbon monoxide, carbon diox:	ide and unidentified org	anic compounds may be
formed during combustion. Hy		
evolve and collect in the hea	adspace of storage tanks	or other enclosed
vessels.		
	•	
L	:	
SECTION IX	MPLOYEE PROTECTION	
RESPIRATORY PROTECTION		
Use NIOSH approved respirator	ry protection as require	d to prevent overexpo-
sure to oil mist, vapor, or	fumes and H2S. Do not e	nter storage compart-
ments unless equipped with a		
ratus with a full facepiece of	operated in a positive p	ressure mode.
1.00.000.70 0000000		

ADDITIONAL PROTECTIVE MEASURES

Use intrinsically safe and/or explosion-proof ventilation as required to control vapor concentrations.

Wear gloves and other protective clothing as required to minimize skin

contact. Wear safety glasses or goggles to avoid eye contact.

#### SECTION X

SPILL OR LEAK PROCEDURES

Caution. Combustible.

Large spills: Eliminate potential sources of ignition. Wear appropriate respirator and other protective clothing. Shut off source of leak only if safe to do so. Dike and contain. Remove with vacuum trucks or pump to storage/salvage vessels. Soak up residue with an absorbent such as clay, sand or other suitable material; place in non-leaking containers and seal tightly for proper disposal. Flush area with water to remove trace residue; dispose of flush solution as above.

Small spills: take up with an absorbent material and place in non-leaking containers for proper disposal.

#### WASTE DISPOSAL

Dispose of in an appropriate disposal facility in compliance with local regulations.

#### ENVIRONMENTAL HAZARDS

This product is considered an "oil" under the Clean Water Act. KEEP OUT OF SURFACE WATERS AND ANY WATERCOURSES OR SEWERS ENTERING OR LEADING TO SURFACE WATERS. See Section XIII.



### RIAL SAFETY DATA SHEET

SDS NUMBER 🕨

52,366 PAGE 4 OF 4

	IVIA	
Shell		970

SECTION XI

SPECI	AL PRECA	ı	ÌΤ	١	C	'n	S	

Caution. Combustible.

Minimize skin contact.

Wash with soap and water before eating, drinking, smoking or using toilet facilities. Launder contaminated clothing before reuse. perly dispose of contaminated leather articles, including shoes, that cannot be decontaminated.

SECTION XII	TRANSPORTATION REC	UIREMENTS	
DEPARTMENT   FLAMMABLE LI	QUID X COMBUSTIBLE LIQUID	O OXIDIZING MATERIAL	NON-FLAMMABLE GAS
OF TRANSPORTATION FLAMMABLE S	OLID POISON, CLASS A	CORROSIVE MATERIAL	NOT HAZARDOUS BY D.O.T. REGULATIONS
CLASSIFICATION FLAMMABLE G	AS POISON,CLASS B	IRRITATING MATERIAL	OTHER-Specify below
D.O.T. PROPER SHIPPING NAME			
Fuel Oil OTHER REQUIREMENTS			
D.O.T. ID. No. = NA 199:	; Guide Sheet No. 2	6. Note: Contai	ners of 110
gallons or less are exer	_		ls with a

#### SECTION XIII OTHER REGULATORY CONTROLS EPA,FDA,OSHA,USDA,CPSC,etc.

EPA - Clean Water Act (CWA)

This product is classified as an oil under Section 311 of the Clean Water Act. Spills entering (a) surface waters or (b) any watercourses or sewers entering/leading to surface waters that cause a sheen MUST be reported to the National Response Center, 800-424-8802.

The information contained herein is based on data considered accurate. However,no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof.

Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in his use of the material.



SHÉLL OIL COMPANY

PRODUCT SAFETY AND COMPLIANCE OIL AND CHEMICAL PRODUCTS P.O. BOX 4320 HOUSTON, TEXAS 77210

DATE PREPARE	D

January 29, 1982



### North American Refractories Co.



BRAND: REFRACRETE ESC

ASTM CLASS:

APPLICATION: CAST MIX

DESCRIPTION:

A high strength 2500°F castable with improved

resistance to thermal shock.

SERVICE DATA: (ASTM C113, C133, C20)

(After firing to stated temperature)

Temperature, °F	Permanent Linear Change, %	Modulus of Rupture, psi	Cold Crushing, psi
220	0	900-1300	4500-6000
1000	0	650-750	3800-4400
1500	ıi.	650-750	3700-4300
2000	0	350-500	2500-3300
2500	0	750-1100	4200-5500
2910	<u>,</u>	<del></del>	
3000	<b></b> ,		
M.S.T.	. <b></b>	tors the	

#### APPLICATION DATA:

Maximum Service Temperature (MST)	( °F)	2500
Amount Required for Installation	(pcf.)	135-140
Bulk Density - After Drying at 220°F	(pcf.)	135-143
- After Firing to 2500°F	(pcf.)	132-140
Water required for 100 lbs. dry (Approx.)	(wt. %)	10

### CHEMICAL DATA: (ASTM C573)

Alumina (Al <sub>2</sub> O <sub>3</sub> )	44.2 %	Lime (CaO)	10.2	%
Silica (SiO <sub>2</sub> )	39.1 %	Magnesia (MgO)	0.1	%
Titania (TiO2)	2.3 %	Alkalies (Na <sub>2</sub> O, K <sub>2</sub> O)	0.3	%
Ferric Oxide (Fe₂O₃)	3.4 %	L.O.I.	0.4	%

3/82

## Material Information Bulletin

(Approved - "Essentially Similar" to Form OSHA 20, Material Safety Data Sheet)



CHEVRON FUEL OIL 6 (1.75 S)

CMS 285060

**WARNING!** 

PROLONGED AND REPEATED CONTACT WITH SKIN CAN BE HARMFUL COMBUSTIBLE KEEP OUT OF REACH OF CHILDREN

#### TYPICAL COMPOSITION

A mixture of Petroleum Residua (atmospheric or vacuum) and Cutter Stocks (lt. cycle oils, diesel or jet) blended to meet specifications.

#### EXPOSURE STANDARD

No OSHA exposure standard of Threshold Limit Value has been established for this material. However, due to the possible carcinogenic effect, exposure should be reduced to the lowest feasible level.

#### PHYSIOLOGICAL & HEALTH EFFECTS

#### **EMERGENCY & FIRST AID PROCEDURES**

#### Eyes

Expected to cause no more than minor eye irritation.

Wash eyes with fresh water for at least 15 minutes. If irritation continues, see a doctor.

#### Skin

Not expected to be irritating to the skin but minor irritation may be noted following prolonged or frequently repeated contact. Prolonged or repeated contact with the skin may eventually lead to skin cancer. See Additional Health Data.

Remove and launder contamined clothing. Wash thoroughly with soap and water following skin contact.

#### Inhalation

Not expected to be acutely toxic by inhalation. See Additional Health Data.

Since this material is not expected to be an inhalation problem, no first aid procedures are required.

#### Ingestion

Not expected to be acutely toxic by ingestion.

If swallowed, give a large amount of water to drink, make person vomit and call a doctor.

#### ADDITIONAL HEALTH DATA

This product may contain significant amounts polynuclear aromatic hydrocarbons (PNA's) which have been shown to cause skin cancer after prolonged and frequent contact with the skin of test animals. Brief or intermittent skin contact with this product is not expected to have serious effects if it is washed from the skin. While skin cancer is unlikely to occur in human beings following use of this product, skin contact should be reduced to a minimum.

#### SPECIAL PROTECTIVE INFORMATION

Eye Protection: Avoid contact with eyes. Eye contact can be avoided by wearing chemical safety goggles.

Skin Protection: Avoid contact with skin or clothing. Skin contact can be minimized by wearing impervious protective clothing including rubber gloves.

Respiratory Protection: No special respiratory protection is normally required. However, if operating conditions create a mist, the use of an approved respirator is recommended.

\_Ventilation: Use this material only in well ventilated areas.

Other: If eye or skin contact can occur, washing facilities for eyes and skin should be available nearby.

#### FIRE PROTECTION

Liquid evaporates and forms vapor which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. Fire hazard is greater as liquid temperature rises above 85°F.

Flash Point: (P-M) 65°C (Min.) Autoignition Temp.: NDA

Flammability Limits: NDA

Extinguishing Media: CO<sub>2</sub>, Dry Chemical,

Foam, Water Spray.

Special Fire Fighting Procedures: For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including selfbreathing apparatus. See contained Hazardous Decomposition products. Read the entire bulletin.

#### ENVIRONMENTAL PROTECTION

Environmental Impact: This material may be classed as a water pollutant and should be kept out of sewage and drainage systems and all bodies of water.

Precautions if Material is Released or Spilled: Eliminate all open flames in vicinity of spill or released vapor. Clean up spills as soon as possible. Absorb large spills with absorbent clay, diatomaceous earth or other suitable material.

Waste Disposal Methods: Place contaminated materials in disposable containers and bury in an approved dumping area.

#### REACTIVITY DATA

Stability (Thermal, Light, etc.): Stable.

Incompatibility (Materials to Avoid): react with strong oxidizing materials.

Hazardous Decomposition Products: Normal combustion forms carbon dioxide and water vapor and oxides of sulfur; incomplete combustion can produce carbon monoxide.

Hazardous Polymerization: Will not occur.

#### PHYSICAL PROPERTIES

Solubility: Insoluble in water; miscible with hydrocarbons. Appearance (Color, Odor, etc.): Black liquid. Boiling Point: NDA Melting Point: n/a Gravity (OAPI): 6.5 (Min.) @ 15.60C Vapor Pressure (mm Hg & Temp.): NDA Vapor Density (Air = 1): NDA Percent Volatile (Volume %): NDA Evaporation (=1): NDA Pour Point: +15°C (Max.) 380 to 480 cSt @ 50°C Viscosity: % Sulfur: 1,75 (Max.)

n/a = Not ApplicableNDA = No Data Available

#### SPECIAL PRECAUTIONS

DO NOT USE OR STORE near flame, sparks or hot surfaces. USE ONLY IN WELL VEN-TILATED AREA.

The above information is based on data of which we are aware and is believed to be correct as of the date hereof. Since the information contained herein may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon the condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.



FABRIC - 84, 84C, 188, 188C MAT - 25M CORDAGE - 50D

SAFETY BULLETIN HS-137 JULY 82

## **CONTAINS NO ASBESTOS**

### MATERIAL SAFETY DATA SHEET

(Approved by U.S. Department of Labor as "Essentially Similar" to Form OSHA-20)

		I. P	RODUCT II	DENTIFIC	ATION			
CHEMICAL NAME AM	ORPHOUS SI	LICA	_		REGULAR TE	LEPHONE I	NO. (302) 9 IE NO. (30	95-0400 2) 995-0496
SYNONYMS: Sili	ca			-	CHEMICAL F	AMILY: SILIC	CA C	
FORMULA: SiG	) <sub>2</sub>				MOLECULAR	WEIGHT: U	nknown	
TRADE NAME AND S'	YNONYMS: S	iltemp* 84, 84C,	188, 1880	C, 25M &	50D			
		II. H	AZARDOU:	S INGRE	DIENTS	•		
•		MATERIAL			•	%	-	TLV (UNITS)
AMORPHOUS SILICA						96-98	20	mppcf (ACGIH)
			III. PHYSI	CAL DAT	Α		····	
BOILING POINT, 760 r	mm Hg	N.A.			FREEZ	ING POINT:		N.A.
SPECIFIC GRAVITY (F	l <sub>2</sub> O = 1)	2.2 g/cm	3		VAPOF	RPRESSURE	@	N.A.
VAPOR DENSITY (AIR	= 1)	N.A.			SOLUE IN WA		ILITY FER, % BY WT. @ N.A.	
PERCENT VOLATILES BY VOLUME		N.A.				RATION L ACETATE	<b>= 1</b> )	N.A.
APPEARANCE AND O	DOR	Off White - Whit	e; no odor		· · · · · · · · · · · · · · · · · · ·			
		IV. FIRE A	ND EXPLO	SION HA	ZARD DATA			
FLASH POINT (TEST METHOD)		N.A.			IGNITION ERATURE		N.A	<b>1.</b>
FLAMMABLE LIMITS I	N AIR, % BY	VOLUME	LO	VER	N.A.	UF	PER	N.A.
EXTINGUISHING MEDIA		•			N.A.			
SPECIAL FIRE- FIGHTING PROCEDURES					N.A.			
UNUSUAL FIRE AND EXPLOSION HAZARDS								

HAVEG

900 GREENBANK ROAD • WILMINGTON, DELAWARE 19808 • PHONE: (302) 995-0400

We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Users are advised to make their own tests to determine the safety and suitability of each such product or product combination for their own purposes.

		\	/. HEALTH	HAZARD D	ATA	
THRESHOLD LIMIT	VALUE	See Se	See Section II.			
EFFECTS OF OVER	REXPOSURE	None F	Presently Kno	own		
EMERGENCY AND AID PROCEDURES	FIRST-	None r	equired; exe	rcise good	personal hygiene.	-
			VI. REACT	IVITY DAT	ΓA	
STAE	BILITY	CONI	CONDITIONS			
UNSTABLE	STABLE		AVOID	NONE		
	х					
INCOMPATIBILITY (MATERIALS TO A)	/OID)				NONE	
HAZARDOUS DECOMPOSITION F	PRODUCTS				NONE	
HAZARDOUS PO	DLYMERIZATION	CONI	OITIONS			
MAY OCCUR V	VILL NOT OCCUP		AVOID		NONE	
	X					
		VII. S	SPILL OR LE	AK PROC	EDURES	
STEPS TO BE TAK IF MATERIAL IS RELEASED OR SPI		N.A.				
WASTE DISPOSAL	METHOD				N.A.	
		VIII. SPE	CIAL PROTI	ECTION IN	FORMATION	
RESPIRATORY PRO	OTECTION	NOT L	ISUALLY RE	QUIRED		
	LOCAL EXHA	UST	NOT USUAL	LY REQ.	ŞPECIAL	NOT USUALLY REQUIRED
VENTILATION	MECHANIC (GENERA	4	NOT USUALLY REQUIRED		OTHER	
PROTECTIVE GLO	ves,		NOT USUALLY EYE REQUIRED PROTECTION NOT USUALLY RE			NOT USUALLY REQUIRED
OTHER PROTECTI	VE EQUIPMENT		NOT USUA	ALLY REQ	UIRED	
		1	X. SPECIAL	PRECAUT	IONS	
PRECAUTIONARY	LABELING	N.A.				
OTHER HANDLING STORAGE CONDIT		IN SOME CASES, SKIN IRRITATION MAY BE EXPERIENCED BY CERTAIN INDIVIDUALS WHEN EXPOSED TO THE FIBERS. PROTECTIVE CLOTHING IS RECOMMENDED WHEN SUCH CASES OCCUR.				



705 North Mountain Road Newington. Connecticut 06111 Telephone: (203) 278-1280

Telex: 99348

## MATERIAL SAFETY DATA SHEET

· I. PF	RODUCT IDENTIFICAT	ion Loctife
Product Name		Part No. 271 Allen 02
Product Type Anaerobic		Formula No.
	II. COMPOSITION	
Ingredients	% by Wt.	Hazard
Polyglycol dimethacrylates	65-70	•
±1s-phenol A fumarate resin	20-25	
Sulfimide	3~5	
Hydroperoxide	2-3	Toxic, Irritant
N,N-Dialkyltoluidines	< 1	Toxic
	•	
III. CHEMIC	CAL AND PHYSICAL F	PROPERTIES
Vapor Pressure < 5 mm at 80°F	Specify Gra	avity <u>1.10 at 80°F</u>
Vapor Density	Boiling Poi	nt> 300°F
Solubility in Water Slight	pH	N/A
ppearance <u>Red Liquid</u>	Odor	Mild

### IV. TOXICITY AND HEALTH HAZARD DATA

loxicity
Oral LD 50 > 5000 mg/kg  Dermal LD 50 > 2000 mg/kg  TLV
Symptoms of Overexposure  May cause dermatitis on prolonged contact in sensitive individuals.
Emergency Treatment Procedures
Ingestion  Do not induce vomiting. Keep individual calm. Obtain medical attention.
Inhalation
Skin Contact Flush with water.
Eye Contact Flush with water.
Personal Protection
Eyes Safety glasses recommended.
Skin Rubber or plastic gloves recommended.
Ventilation
V. FLAMMABILITY AND EXPLOSIVE PROPERTIES
Flash Point > 200 °F Method T.C.C.
Explosive Limits (% by volume in air) Lower% Upper%
Recommended Extinguishing Agents CO <sub>2</sub> , Foam, Dry Chemical
Hazardous Products Formed by Fire or Thermal Decomposition
Unusal Fire or Explosion Hazards
None
Compressed Gases Name
Pressure at Room Temperature

Page 3 of 3

VI.	RFA	CT	IVITY	/ h	ΔΤΔ
T 44					$\mathbf{n}$

Stability	[X] Stable	☐ Unstable
Hazardous Polymerization	📋 May Occur	☑ Will Not Occur
Hazardous Decomposition Pr	oducts (non-thermal)	
Incompatibility		
V. SP	ILL OR LEAK AND DISPOS	SAL PROCEDURES
		illed, closed container until disposal.
Recommended methods of d Bury or incinerate in		al regulations.
VIII.	STORAGE AND HANDLING	G PROCEDURES
Storage Store below 110°F to p	reserve shelf-life.	
Handling Avoid prolonged skin c	ontact.	
	IX. SHIPPING REGUL	ATIONS
Type or Class DOTUn	restricted	
IATAUr	restricted	
Proper Shipping Name DC	т	
IAT	A	
Prepared By Martin Haus	ser //	time to the second seco
Title Vice President -	Environmental Health and Sa	afety
Date September 22, 198	32	·
, r		

# TEXACO INC. INDUSTRIAL HYGIENE, TOXICOLOGY, AND MATERIAL SAFETY DATA SHEET



NOTE: NO REPRESENTATION IS MADE AS TO THE ACCURACY OF THE INFORMATION HERBIN. SEE PAGE E FOR CONDITIONS UNDER WHICH DATA ARE FURNISHED.

Trade Name and Synor	' I
	R LUBT EP SAE 85W-140
Manufacturer's Name	Emergency Telephone No.
Texaco Inc	(914) 831-3400 ext. 406
Address P.O. Box 509 Be	nacon NV 12508
Chemical Name and/or	
Gear Lubricant	Tanny of Description
THIS PRODUCT IS CL	ASSIFIED AS: X NOT HAZARDOUS:
	BY DEFINITION NO.(S) ON ATTACHED EXPLANATION SHEETS
WARNING STATE	
	ION: MAY CAUSE IRRITATION TO EYES
The second secon	
OCCUPATIONAL	CONTROL PROCEDURES
Protective Equipment ( Eyes:	Type) Chemical type goggles or face shield optional.
Skin:	Exposed employes should exercise reasonable personal cleanliness; this includes cleansing exposed skin areas several times daily with soap and water, and laundering or dry cleaning soiled work clothing at least weekly.
Inhalation:	None required if exposures are within permissible concentrations; see below.
Ventilation:	Normal
Permissible Concentrat	ions:
Аіг:	5 mg/cubic meter of air for mineral oil mist averaged over an 8 hour daily exposure (ACGIH, 1983).
EMERGENCY AND	FIRST AID PROCEDURES
First Aid Eves:	Flush with water for fifteen minutes.
Skin:	Wash exposed areas with soap and water.
ingestion:	None considered necessary.
inhalation:	None considered necessary.
Other Instructions:	None. received AUG 14 1986



PHYSIOLOGICAL	EFFECTS: Code No. 02317
Effects of Exposure Acute: Eyes:	Believed to cause slight-moderate eye irritation.
Skin:	Believed to be slightly irritating with possible redness, edema, or drying of the skin.
Respiratory System:	Believed to be minimally irritating if not in excess of permissible concentrations; see page 1.
Chronic:	N.Đ.
Other:	-
Sensitization Propertie	·s:
Skin: Yes N	No Unknown _X Respiratory: Yes No Unknown _X_
Skin	N.D.; similar product G.T. 20.0 g/kg (rat); practically non-toxic N.D.  N.D.; similar product G.T. 20g/kg (rabbit); practically non-toxic N.D.  Sition of Irritation (Species)  N.D.; similar product 1.67/8.0 (rabbit); slightly irritating
	N.D.; similar product 9.66/110 (rabbit); slightly irritating N.D.; See above.
FIRE PROTECTION	
Ignition Temp. F. Flammable Limits% Products Evolved Wh	N.D. Flash Point F. (Method) 385 F (COC)  Lower N.D. Upper N.D.  en Subjected to Heat or Combustion: Carbon monoxide, carbon dioxide, aldehydes and ketones, combustion products of nitrogen and sulfur.
Recommended Fire E	According to the National Fire Protection Association Guide, use water spray, dry chemical, foam, or carbon dioxide.  Water or foam may cause frothing. Use water to cool fire-exposed containers. If a leak or spill has not ignited, use water spray to disperse the vapors and to provide protection for persons attempting to stop the leak.  Hazards:  None.



ENVIRONMENTA	AL PROTECTION	Eade No. 02317	
Waste Disposal Met	Under RCRA, it is the redetermine, at the time criteria for hazardous transformations, mixture	responsibility of the user of products to of disposal, whether product meets RCRA waste. This is because product uses, re, processes, etc. may render the result—.(See Remarks for Waste Classification.)	
Procedures in Case	of Breakage or Leakage: Avoid contact with eyes absorb on suitable mate	s. Contain spill if possible. Wipe up or erial and shovel up.	
Remarks:		Product has been evaluated for RCRA charac- meet criteria of a hazardous waste if ased form.	
PRECAUTIONAR	Y LABEL		
	CAUTION: MAY CA	AUSE IRRITATION TO EYES	
Avoid contact with eyes. Wash thoroughly after handling.			
Minimum fe	o high temperatures show	tures should be maintained. Periods of all the minimized. Water contamination	
DOT Proper Snippin DOT Hazard Class (i	g Name: N.A. f applicable): N.A.		
CHEMICAL AND	PHYSICAL PROPERTIES		
Boiling Point (OF) _	N.D.	Vapor Pressure N.D. (mmHg)	
Specific Gravity	.9117 (H <sub>2</sub> O=1)	Vapor Density N.D. (Air=1)	
Appearance and Odo	or RED, GREEN BLOOM		
pH of undiluted pro	duct N.A.	Solubility N.D.	
Percent Volatile by	Volume N.D.	Evaporation $N.D.$ ( )=1	
ViscositycSt @	100 C = 27.55	Other	
	Violently With: (If others is check	<ul> <li>Do not occur</li> <li>ded below, see additional comments on page 4 for futher details</li> <li>ng Oxidizers</li> <li>Others</li> <li>None of These</li> <li>X</li> </ul>	



COMPOSITION Code No.	02317
Components Presenting a Significant Hazard	%
None	
	,
Other Components	%
Petroleum ori	80 ~ 95
Methacrylate polymer	Less than 1
Additive package containing: chlorine, phosphorous, boron, nitrogen	5 - 10
only mo, proophia cos, so any masses	, ,,
	<u> </u>
	1
ADDITIONAL COMMENTS	alan kanada
TEVACO ANTENDO TO CONTRA CONTR	
TEXACO INTENDS TO COMPLY FULLY WITH PROVISIONS OF THE TOXIC SUBSTANCES CONTROL A STATE OF MICHIGAN CRITICAL MATERIALS ACT (REVISED 1984)	.C
No critical materials present.	
The second section and the second second second second second second second second second	his
To determine applicability or effect of any law or regulation with respect to this product, user should consult legal advisor or the appropriate government agency. Texaco does not undertake to furnish advice on such mat	ters.
By R. T. Richards Title Mgr. Env. Conservation & Toxicolo	υ <u>κ</u> Υ
Date 01-06-83 New Revised, Supersedes	



NOTE: THIS DATA IS FURNISHED GRATUITOUSLY INDEPENDENT OF ANY SALE
OF THE PRODUCT. ONLY FOR YOUR INVESTIGATION AND INDEPENDENT VERIFI—
CATION, WHILE THE INFORMATION IS BELIEVED TO BE CORRECT, TEXACO INC. MAKES NO REP
RESENTATION AS TO THE ACCURACY OF THE INFORMATION CONTAINED HEREIN, TEXACO INC.
SHALL IN NO EVENT BE RESPONSIBLE FOR ANY DAMAGES OF WHATSOEVER NATURE DIRECT—
LY OR INDIRECTLY RESULTING FROM THE PUBLICATION OR USE OF OR RELIANCE UPON DATA
CONTAINED HEREIN. NO WARRANTY, EITHER EXPRESS OR IMPLIED OF MERCHANTABILITY OR
FITNESS OR OF ANY NATURE WITH RESPECT TO THE PRODUCT OR TO THE DATA HEREIN IS
MADE HEREUNDER. DATA SHEET ARE AVAILABLE FOR ALL TEXACO PRODUCTS. YOU ARE
URGED TO OBTAIN DATA SHEETS FOR ALL TEXACO PRODUCTS YOU BUY, PROCESS, USE, OR
DISTRIBUTE, AND ENCOURAGED TO ADVISE ANYONE WORKING WITH OR EXPOSED TO SUCH
PRODUCTS OF THE INFORMATION CONTAINED HEREIN.

EXPLANATION OF THE INDUSTRIAL HYGIENE TOXICOLOGY, AND MATERIAL SAFETY DATA SHEET

PRODUCT INFORMATION

Trade Name and Synonyms

Refer to the code number and name under which the product is marketed and the common commercial name of the product.

Manufacturer's Name and Address Self explanatory.

Chemical Name and/or Family or Description

Refer to chemical, generic, or descriptive name of single elements and compounds.

For purposes of this form, a product is defined as hazardous if it possesses one or more of the following charateristics: (1) has a flash-point below 200 degrees Farenheit, closed cup or subject to spontaneous heating; (2) has a threshold limit value below 500 ppm gases and vapor below 5 mg/m<sup>3</sup>for dust, fumes and mist, and below 25 MPPCF for mineral dust; (3) a single dose oral LD50 below 500 mg/kg; (4) causes burns to the skin in the short-term exposure or is systemically toxic by skin contact; (5) has been demonstrated to be a skin or eye irritant or causes respiratory irritation; (6) may cause skin or respiratory sensitization; (7) has teratogenic, mutagenic or other toxic effects; (8) may cause asphyxia or pneumoconiosis; (9) in the course of normal operations may produce dusts, gases, fumes, vapor, mist, or smoke which have one or more of the above characteristics; (10) is hazardous according to OSHA 1910.1200(g)(2)(vii).

OCCUPATIONAL CONTROL PROCEDURES (Consult your Industrial Hygienist or Occupational Health Specialist.)

Protective Equipment

Type of protective equiment that is necessary for the safe handling and use of this product.

Ventilation

Normal means adequate to maintain permissible concentrations. Ventilation: type, i.e. local exhaust, mechanical, etc.

Permissible Concentrations

Indicates Threshold Limit Value (TLV) and / or Time Weighted Average (TWA) as established by the American Conference of Governmental Industrial Hygienists and/or standards promulgated by the Occupational Safety and Health Administration.

EMERGENCY AND FIRST AID PROCEDURES

Give first aid and emergency procedures in case of eye and/or skin contact, ingestion and inhalation.

PHYSIOLOGICAL EFFECTS

Acute Exposures (Eye, Skin, Respiratory System)

Refers to the most common effects that would be expected to occur from direct contact with the product.

Chronic

Refers to the effects that are most likely to occur from repeated or prolonged exposure.

Sensitizer

Means a substance which will cause on or in normal living tissue, through an allergic or photodynamic process, a hypersensitivity which becomes evident on reapplication of, or exposure to, the same substance.

Median Lethal Dose or Concentration (LD50,LC50)

Refers to that dose or concentration of the material which will produce death in 50 per cent of the animals. For inhalation, exposure time is indicated.

Irritation Index

Refers to an empirical score (Draize Method) for eye and skin irritation which tested by the method described, if numbers are not available, a yes or no answer indicates whether or not the material is an irritant.

FIRE PROTECTION INFORMATION

Ignition Temperature

Refers to the temperature in degrees. Farenheit, at which a liquid will give off enough flammable vapor to ignite, and burn continuously for 5 seconds.

Flash Point (State Method used)

Refers to the temperature in degrees Farenheit, at which a liquid will give off enough flammable vapor to ignite.



Flammable Limits

Refers to the range of gas or vapor concentration (percent by volume in air) which will burn or explode if an ignition source is present. Lower means the the lower flammable limit and upper means the upper flammable limit given in percent.

Products Evolved When Subjected to Heat or Combustion.

The products evolved when this material is subjected to heat or combustion, includes temperature at which oxidation or other forms of degradation occurs.

Recommended Fire Extinguishing Agents and Special Procedures

Specifies the fire fighting agents that should be used to extinguish fires. If unusual fire hazards are involved or special procedures indicated, this is specified.

Unsusual Fire or Explosive Hazards

Specifies hazards to personnel in case of fire, explosive danger.

ENVIRONMENTAL PROTECTION

Specifies how this product can be successfully disposed of.

Indicates precautions necessary in the event that leakage or breakage occurs. Included are (a) clean-up procedures, (b) personal protective equipment if necessary, (c) hazards that may be created, i.e. fire, explosion, etc.

PRECAUTIONARY LABEL

Label that is required or recommended.

Requirements for Transportation, Handling and Storage

Specifies handling and storage procedures. Gives ICC, DOT, or other regulations related to safety and health for transportation.

CHEMICAL AND PHYSICAL PROPERTIES

Boiling Point (or Range)

In degrees Farenheit or Celsius Boiling Point at 760 mmHg.

Vapor Pressure

Refers to the pressure of saturated vapor above the liquid expressed in mm of Hg. at 20 degrees Celsius or 68 degrees Farenheit.

Specific Gravity

The ratio of the density of the product to the density of water.

Vapor Density

The ratio of the density of the vapor at saturation concentration (20 degrees Celsius or 68 degrees Farenheit to the density of air at 760 mmHq.)

Appearance and Odor

Refers to the general characterization of the material, e.g. powder, colorless liquid, aromatic odor, etc.

pН

Refers to the degree of acidity or basicity of the material in a specific concentration.

pH1-5 - STRONGLY ACIDIC pH5-7 - WEAKLY ACIDIC pH7-9 - WEAKLY BASIC pH9-14 - STRONGLY BASIC

Solubility

Refers to the solubility of a material by weight in water at room temperature. The term neglingible, less than 0.1 %; slight, 0.1 to 1%; moderate, 1 to 10%; appreciable, 10% or greater. Gives solubility in organic solvents where appropriate.

Percent Volatile by volume

Refers to the amount volatized at 20 degrees Celsius or 68 degrees Farenheit when allowed to evaporate.

Evaporation

Gives the rate of evaporation compared to a standard

Viscosity

Measure of flow characteristics in Kinematic viscosity of Saybolt Universal Seconds.

Hazardous Polymerization

Hazardous polymerization is that reaction which takes place at a rate which produces large amounts of energy. Indicates whether it may or may not occur and under what storage conditions.

Does the Material React Violently

Indicates whether the material will react violently, releasing large amounts of energy when exposed under conditions listed.

Composition

Components of the product as manufactured.

Texaco Inc. 2000 Westchester Avenue White Plains, New York 10650 Phone (914) 831-3400 (Beacon)

# TEXACO INC. INDUSTRIAL HYGIENE, TOXICOLOGY, AND MATERIAL SAFETY DATA SHEET



NOTE: NO REPRESENTATION IS MADE AS TO THE ACCURACY OF THE INFORMATION HEREIN. SEE PAGE 5 FOR CONDITIONS UNDER WHICH DATA ARE FURNISHED.

Trade Name and Synor	ıyms		
01970 CRATER 2	K_FLUID		
Manufacturer's Name	Emergency Telephone No.		
Texaco Inc	(914) 831-3400 ext. 406		
Address			
	eacon, NY 12508		
Chemical Name and/or	Family or Description		
Gear Lubricant			
THIS PRODUCT IS CL			
HAZARDOUS	BY DEFINITION NO.(S) 2 ON ATTACHED EXPLANATION SHEETS		
WARNING STATE CAUT	ION: VAPOR HARMFUL		
OCCUPATIONAL	CONTROL PROCEDURES		
Protective Equipment ( Eyes:	Type) Chemical type goggles or face shield optional.		
Skin:	Exposed employes should exercise reasonable personal cleanliness; this includes cleansing exposed skin areas several times daily with soap and water, and laundering or dry cleaning soiled work clothing at least weekly.		
Inhalation:	Supplied air respiratory protection for cleaning large spills or upon entry into tanks, vessels, or other confined spaces.		
Ventilation:	Normal		
Permissible Concentrat	ions:		
Air:	350 ppm for Trichloroethane component averaged over an 8 hour daily exposure (ACGIH 1983).		
EMERGENCY AND	FIRST AID PROCEDURES		
First Aid Eyes:	As with most foreign materials, should eye contact occur, flush eyes with plenty of water.		
Skin:	Wash exposed areas with soap and water.		
Ingestion:	None considered necessary.		
inhalation:	Should symptoms noted under physiological effects occur, remove to fresh air. If not breathing, apply artificial respiration.		
Other Instructions:	None.		



PHYSIOLOGICAL	EFFECTS: Code No. 01970		
Effects of Exposure			
Acute: Eyes:	Believed to be minimally irritating.		
Skin:	Believed to be slightly irritating with possible redness, edema, or drying of the skin.		
Respiratory System:	May cause symptoms of drowsiness or narcosis from inhalation of high vapor concentrations.		
Chronic:	N.D.		
Other:	_		
Sensitization Propertie	c·		
Jensingation Tropertie	5-		
Skin: Yes N	lo Unknown _X Respiratory: Yes No Unknown _X		
Median Lethal Dose (L			
Inhalation	N.D.; believed to be G.T. 3 g/kg (rabbit); practically non-toxic		
Other	N. D.		
	tion of Irritation (Species)		
Skin	N.D.; believed to be 0.5-3.0/8.0 (rabbit); slightly irritating N.D.; believed to be L.T. 15/110 (rabbit); no appreciable effect		
Symptoms of Exposur	e N.D.; See above		
FIRE PROTECTION			
Ignition Temp. F	N.D. Flash Point F. (Method) N.D.		
Flammable Limits%	Lowe <u>r N.D.</u> Upper N.D.		
Products Evolved VVNs	en Subjected to Heat or Combustion: Carbon monoxide, carbon dioxide, aldehydes and ketones, combus-		
	tion products of nitrogen, sulfur and chlorine.		
Recommended Fire Extinguishing Agents And Special Procedures:			
necommended the Ex	According to the National Fire Protection Association Guide, use		
	water spray, dry chemical, foam, or carbon dioxide. Water or foam may cause frothing. Use water to cool fire-exposed		
	containers. If a leak or spill has not ignited, use water spray		
	to disperse the vapors and to provide protection for persons attempting to stop the leak.		
Unusual or Explosive			
	None.		

N.D. - Not Determined N.A. - Not Applicable < Less Tran > Greater Than



ENVIRONMENTA	L PROTECTION	Code No. 01970	
Waste Disposal Met	Under RCRA, it is the r determine, at the time criteria for hazardous transformations, mixturing material hazardous. of Breakage or Leakage:	esponsibility of the user of products to of disposal, whether product meets RCRA waste. This is because product uses, e, processes, etc. may render the result-(See Remarks for Waste Classification.)  le. Wipe up or absorb on suitable material	
Remarks:		roduct has been evaluated for RCRA charac- meet criteria of a hazardous waste if sed form.	
PRECAUTIONAR	Y LABEL		
	CAUTION: VAPOR H	IARMFUL	
Avoid prolonged breathing of vapor or mist. Keep container closed. Use only in well-ventilated locations. Avoid prolonged or repeated contact with skin. CONTAINS 1,1,1-TRICHLORDETHANE  Requirements for Transportation, Handling and Storage: Minimum feasible handling temperatures should be maintained. Periods of exposure to high temperatures should be minimized. Water contamination should be avoided.			
DOT Proper Shipping DOT Hazard Class (i			
CHEMICAL AND	PHYSICAL PROPERTIES		
Boiling Point (OF)	N.D.	Vapor Pressure N.D. (mmHg)	
Specific Gravity ——	N.D. (H <sub>2</sub> O=1)	Vapor Density_N.D. (Air=1)	
Appearance and Odd	or <u>N.D.</u>		
pH of undiluted pro	duct N.A.	Solubility N.D.	
Percent Volatile by	Volume_N.D.	Evaporation $N.D.$ ( )= 1	
Viscosity <u>cSt</u> @	50 C = 221.5	Other	
	Violently With: (If others is checked	Do not occur ed below, see additional comments on page 4 for futher details) g Oxidizers Others None of These X	

COMPOSITION Code No.	01970
Components Presenting a Significant Hazard	%
Additive package containing: chlorine	10 - 20
Other Components	%
Petroleum oil CHO	65 - 80 5 - 10
ADDITIONAL COMMENTS	
TEXACO INTENDS TO COMPLY FULLY WITH PROVISIONS OF THE TOXIC SUBSTANCES CONTROL AC STATE OF MICHIGAN CRITICAL MATERIALS ACT (REVISED 1983)  No critical materials present.	
To determine applicability or effect of any law or regulation with respect to this product, user should consult legal advisor or the appropriate government agency. Texaco does not undertake to furnish advice on such matter agency. By R. T. Richards  Title Mgr. Env. Conservation & Toxicolo	ers.
Date 01-07-83 New Revised, Supersedes	

N.D. - Not Determined N.A. - Not Applicable < Less Than > Greater Than

4



NOTE: THIS DATA IS FURNISHED GRATUITOUSLY INDEPENDENT OF ANY SALE
OF THE PRODUCT. ONLY FOR YOUR INVESTIGATION AND INDEPENDENT VERIFI—
CATION. WHILE THE INFORMATION IS BELIEVED TO BE CORRECT, TEXACO INC. MAKES NO REP
RESENTATION AS TO THE ACCURACY OF THE INFORMATION CONTAINED HEREIN. TEXACO INC.
SHALL IN NO EVENT BE RESPONSIBLE FOR ANY DAMAGES OF WHATSOEVER NATURE DIRECT—
LY OR INDIRECTLY RESULTING FROM THE PUBLICATION OR USE OF OR RELIANCE UPON DATA
CONTAINED HEREIN. NO WARRANTY, EITHER EXPRESS OR IMPLIED OF MERCHANTABILITY OR
FITNESS OR OF ANY NATURE WITH RESPECT TO THE PRODUCT OR TO THE DATA HEREIN IS
MADE HEREUNDER. DATA SHEET ARE AVAILABLE FOR ALL TEXACO PRODUCTS. YOU ARE
URGED TO OBTAIN DATA SHEETS FOR ALL TEXACO PRODUCTS YOU BUY, PROCESS, USE, OR
DISTRIBUTE, AND ENCOURAGED TO ADVISE ANYONE WORKING WITH OR EXPOSED TO SUCH
PRODUCTS OF THE INFORMATION CONTAINED HEREIN.

## EXPLANATION OF THE INDUSTRIAL HYGIENE TOXICOLOGY. AND MATERIAL SAFETY DATA SHEET

PRODUCT INFORMATION

Trade Name and Synonyms

Refer to the code number and name under which the product is marketed and the common commercial name of the product.

Manufacturer's Name and Address Self explanatory.

Chemical Name and/or Family or Description

Refer to chemical, generic, or descriptive name of single elements and compounds.

For purposes of this form, a product is defined as hazardous if it possesses one or more of the following charateristics: (1) has a flash-point below 200 degrees Farenheit, closed cup or subject to spontaneous heating; (2) has a threshold limit value below 500 ppm gases and vapor below 5 mg/m3for dust, fumes and mist, and below 25 MPPCF for mineral dust; (3) a single dose oral LD50 below 500 mg/kg; (4) causes burns to the skin in the short-term exposure or is systemically toxic by skin contact; (5) has been demonstrated to be a skin or eye irritant or causes respiratory irritation; (6) may cause skin or respiratory sensitization; (7) has teratogenic, mutagenic or other toxic effects; (8) may cause asphyxia or pneumoconiosis; (9) in the course of normal operations may produce dusts, gases, fumes, vapor, mist, or smoke which have one or more of the above characteristics; (10) is hazardous according to OSHA 1910.1200(g)(2)(vii).

OCCUPATIONAL CONTROL PROCEDURES (Consult your Industrial Hygienist or Occupational Health Specialist.)

Protective Equipment

Type of protective equiment that is necessary for the safe handling and use of this product.

Ventilation

Normal means adequate to maintain permissible concentrations.

Ventilation: type, i.e. local exhaust, mechanical, etc.

Permissible Concentrations

Indicates Threshold Limit Value (TLV) and / or Time Weighted Average (TWA) as established by the American Conference of Governmental Industrial Hygienists and/or standards promulgated by the Occupational Safety and Health Administration.

EMERGENCY AND FIRST AID PROCEDURES

Give first aid and emergency procedures in case of eye and/or skin contact, ingestion and inhalation.

PHYSIOLOGICAL EFFECTS

Acute Exposures (Eye, Skin, Respiratory System)

Refers to the most common effects that would be expected to occur from direct contact with the product.

Chronic

Refers to the effects that are most likely to occur from repeated or prolonged exposure.

Sensitizer

Means a substance which will cause on or in normal living tissue, through an allergic or photodynamic process, a hypersensitivity which becomes evident on reapplication of, or exposure to, the same substance.

Median Lethal Dose or Concentration (LD50,LC50)

Refers to that dose or concentration of the manterial which will produce death in 50 per cent of the animals. For inhalation, exposure time is indicated.

Irritation Index

Refers to an empirical score (Draize Method) for eye and skin irritation which tested by the method described, if numbers are not available, a yes or no answer indicates whether or not the material is an irritant.

FIRE PROTECTION INFORMATION

Ignition Temperature

Refers to the temperature in degrees. Farenheit, at which a liquid will give off enough flammable vapor to ignite, and burn continuously for 5 seconds.

Flash Point (State Method used)

Refers to the temperature in degrees Farenheit, at which a liquid will give off enough flammable vapor to ignite.



Flammable Limits

Refers to the range of gas or vapor concentration (percent by volume in air) which will burn or explode if an ignition source is present. Lower means the the lower flammable limit and upper means the upper flammable limit given in percent.

Products Evolved When Subjected to Heat or Combustion

The products evolved when this material is subjected to heat or combustion, includes temperature at which oxidation or other forms of degradation occurs.

Recommended Fire Extinguishing Agents and Special Procedures

Specifies the fire fighting agents that should be used to extinguish fires. If unusual fire hazards are involved or special procedures indicated, this is specified.

Unsusual Fire or Explosive Hazards

Specifies hazards to personnel in case of fire, explosive danger.

ENVIRONMENTAL PROTECTION

Specifies how this product can be successfully disposed of.

Indicates precautions necessary in the event that leakage or breakage occurs. Included are (a) clean-up procedures, (b) personal protective equipment if necessary, (c) hazards that may be created, i.e. fire, explosion, etc.

PRECAUTIONARY LABEL

Label that is required or recommended.

Requirements for Transportation, Handling and Storage

Specifies handling and storage procedures. Gives ICC, DOT, or other regulations related to safety and health for transportation.

CHEMICAL AND PHYSICAL PROPERTIES

Boiling Point (or Range)

In degrees Farenheit or Celsius Boiling Point at 760 mmHg.

Vapor Pressure

Refers to the pressure of saturated vapor above the liquid expressed in mm of Hg, at 20 degrees Celsius or 68 degrees Farenheit.

Specific Gravity

The ratio of the density of the product to the density of water.

Vapor Density

The ratio of the density of the vapor at saturation concentration (20 degrees Celsius or 68 degrees Farenheit to the density of air at 760 mmHq.)

Appearance and Odor

Refers to the general characterization of the material, e.g. powder, colorless liquid, aromatic odor, etc.

рH

Refers to the degree of acidity or basicity of the material in a specific concentration.

pH1-5 - STRONGLY ACIDIC pH5-7 - WEAKLY ACIDIC pH7-9 - WEAKLY BASIC pH9-14 - STRONGLY BASIC

Solubility

Refers to the solubility of a material by weight in water at room temperature. The term neglitible, less than 0.1 %; slight, 0.1 to 1%; moderate, 1 to 10%; appreciable, 10% or greater. Gives solubility in organic solvents where appropriate.

Percent Volatile by volume

Refers to the amount volatized at 20 degrees Celsius or 68 degrees Farenheit when allowed to evaporate.

Evaporation

Gives the rate of evaporation-compared to a standard

Viscosity

Measure of flow characteristics in Kinematic viscosity of Saybolt Universal Seconds.

Hazardous Polymerization

Hazardous polymerization is that reaction which takes place at a rate which produces large amounts of energy. Indicates whether it may or may not occur and under what storage conditions.

Does the Material React Violently

Indicates whether the material will react violently, releasing large amounts of energy when exposed under conditions listed.

Composition

Components of the product as manufactured.

Texaco Inc. 2000 Westchester Avenue White Plains, New York 10650 Phone (914) 831-3400 (Beacon) 1,10

# TEXACO INC. INDUSTRIAL HYGIENE, TOXICOLOGY, AND MATERIAL SAFETY DATA SHEET

TEXACO

NOTE: NO REPRESENTATION IS MADE AS TO THE ACCURACY OF THE INFORMATION HEREIN. SEE PAGE 5 FOR CONDITIONS UNDER WHICH DATA ARE FURNISHED.

Trade Name and Synon	yms
01956 TEXCLAD 2	2
Manufacturer's Name	Emergency Telephone No.
Texaco Inc Address	(914) 831-3400 ext. 406
	eacon, NY 12508
Chemical Name and/or	Family or Description
Industrial Grea	ase
THIS PRODUCT IS CLA	ASSIFIED AS: X NOT HAZARDOUS:
	BY DEFINITION NO.(S) ON ATTACHED EXPLANATION SHEET 4
WARNING STA	
NONE	CONSIDERED NECESSARY.
OCCUPATIONA	L CONTROL PROCEDURES
Protective Equipment (* Eyes:	Type) Chemical type goggles or face shield optional.
• •	
Skin:	Exposed employes should exercise reasonable personal cleanliness;
<b>3K</b> III:	this includes cleansing exposed skin areas several times daily
	with soap and water, and laundering or dry cleaning soiled work
	clothing at least weekly.
la baladian.	Word wasningd than handling at minimum family transmissions
Inhalation:	None required when handling at minimum feasible temperatures.
Ventilation Required:	Normal
B	
Permissible Concentrati	
Air:	None established for greases.
EMERGENCY A	ND FIRST AID PROCEDURES
First Aid	An with most foreign metacials should not rectant account flush
Eγes:	As with most foreign materials, should eye contact occur, flush eyes with plenty of water.
,	
Skin:	None considered necessary.
Ingestion:	None considered necessary.
Inhalation:	None considered necessary.
Other Instructions:	None.

N.D. - Not Determined N.A. - Not Applicable < Less Than > Greater Than



	AL EFFECTS: Code No. 01956
Effects of Exposure	
Acute:	
Eyes:	N.D.Believed to be minimally irritating.
Skin:	N.D. Believed to be minimally irritating.
Respiratory System:	N.D. Believed to be minimally irritating.
Chronic:	N.D.
Other:	-
Sensitization Propertie	s:
Skin: Yes N	lo Unknown X Respiratory: Yes No Unknown X
Median Lethal Dose (L	
	N.D.; believed to be G.T. 5 g/kg (rat); practically non-toxic
Inhalation	
Other	N.D.; believed to be G.T. 3 g/kg (rabbit); practically non-toxic
	ation of Irritation (Species)
	N.D.; believed to be L.T. 0.5/8.0 (rabbit); no appreciable effect
•	N.D.; believed to be L.T. 15/110 (rabbit); no appreciable effect
•	N.D.; believed to be L.T. 15/110 (rabbit); no appreciable effect N.D.; None expected other than possible minimal irritation
Symptoms of Exposur	
Symptoms of Exposur	e N.D.; None expected other than possible minimal irritation
Symptoms of Exposur FIRE PROTECT	e N.D.; None expected other than possible minimal irritation  ION INFORMATION
Symptoms of Exposur FIRE PROTECT Ignition Temp. F. Flammable Limits%	ION INFORMATION  N.D. Flash Point F. (Method) N.D. (grease)  Lower N.D. Upper N.D.  en Subjected to Heat or Combustion:
Symptoms of Exposur FIRE PROTECT Ignition Temp. F. Flammable Limits%	N.D.; None expected other than possible minimal irritation  ION INFORMATION  N.D. Flash Point F. (Method) N.D. (grease)  Lower N.D. Upper N.D.  en Subjected to Heat or Combustion:  Carbon monoxide, carbon dioxide, aldehydes and ketones, combus-
Symptoms of Exposur FIRE PROTECT Ignition Temp. F. Flammable Limits%	ION INFORMATION  N.D. Flash Point F. (Method) N.D. (grease)  Lower N.D. Upper N.D.  en Subjected to Heat or Combustion:
Symptoms of Exposur FIRE PROTECT Ignition Temp. F. Flammable Limits%	N.D.; None expected other than possible minimal irritation  ION INFORMATION  N.D. Flash Point F. (Method) N.D. (grease)  Lower N.D. Upper N.D.  en Subjected to Heat or Combustion:  Carbon monoxide, carbon dioxide, aldehydes and ketones, combus-
FIRE PROTECT  Ignition Temp. F. Flammable Limits%  Products Evolved Whe	ION INFORMATION  N.D. Flash Point F. (Method) N.D. (grease)  Lower N.D. Upper N.D.  on Subjected to Heat or Combustion:  Carbon monoxide, carbon dioxide, aldehydes and ketones, combustion products of nitrogen and sulfur.  According to the National Fire Protection Association Guide, use water spray, dry chemical, foam, or carbon dioxide.  Water or foam may cause frothing. Use water to cool fire-exposed containers. If a leak or spill has not ignited, use water spray to disperse the vapors and to provide protection for persons attempting to stop the leak.

#### **ENVIRONMENTAL PROTECTION**

Code No. 01956

Waste Disposal Method:

Under RCRA, it is the responsibility of the user of products to determine, at the time of disposal, whether product meets RCRA criteria for hazardous waste. This is because product uses, transformations, mixture, processes, etc. may render the resulting material hazardous. (See Remarks for Waste Classification.)

Procedures in Case of Breakage or Leakage:

Contain spill if possible. Wipe up or absorb on suitable material and shovel up.

Remarks:

Waste Classification: Product has been evaluated for RCRA characteristics and does not meet criteria of a hazardous waste if discarded in its purchased form.

#### PRECAUTIONARY LABEL

NONE CONSIDERED NECESSARY.

Requirements for Transportation, Handling and Storage:

Minimum feasible handling temperatures should be maintained. Periods of exposure to high temperatures should be minimized. Water contamination should be avoided.

DOT Proper Shipping Name: N.A.
DOT Hazard Class (if applicable): N.A.

#### CHEMICAL AND PHYSICAL PROPERTIES

Boiling Point (°F) N.D.	Vapor Pressure N.D. (mmHg)
Specific Gravity N.D. (H <sub>2</sub> O=1)	Vapor Density N.D. (Air=1)
Appearance and Odor	
pH of undiluted product <u>N.A.</u>	Solubility N.D.
Percent Volatile by Volume N.D.	Evaporation N.D. ( )=1
Viscosity 36.6 cSt @ 100 mC	Other
Hazardous Polymerizations Occur X  The Material Reacts Violently With: (If Others is checke  Air Water Heat Stre	d below, see Additional Comments on Page 4 for further details)

COMPOSITION Code	
Components Presenting a Significant Hazard	0 <u>1956</u> %
None	
Other Components	%
Mineral oil	80 - 95
Water Additive package containing:	Less than 1
calcium Additive package containing:	1 - 5
molybdenum, sulfur	1 - 5
	1
ADDITIONAL COMMENTS	
TEXACO INTENDS TO COMPLY FULLY WITH PROVISIONS OF THE TOXIC SUBSTANCES CONTROL AC STATE OF MICHIGAN CRITICAL MATERIALS ACT (REVISED 1982)	T
No criticals materials present. Maximum usable temperature 175 F.	
To determine applicability or effect of any law or regulation with respect to this product, user shoul legal advisor or the appropriate government agency. Texaco does not undertake to furnish advice o	d consult his n such matters.
By R. T. Richards Title Mgr. Env. Conservation & Toxicolo	
Date: 01-07-83 New Revised, Supersedes	
	<u></u>

NOTE: THIS DATA IS FURNISHED GRATUITOUSLY INDEPENDENT OF ANY SALE OF THE PRODUCT. ONLY FOR YOUR INVESTIGATION AND INDEPENDENT VERIFICATION. WHILE THE INFORMATION IS BELIEVED TO BE CORRECT, TEXACO INC. MAKES NO REPRESENTATION AS TO THE ACCURACY OF THE INFORMATION CONTAINED HEREIN. TEXACO INC. SHALL IN NO EVENT BE RESPONSIBLE FOR ANY DAMAGES OF WHATSOEVER NATURE DIRECTLY OR INDIRECTLY RESULTING FROM THE PUBLICATION OR USE OF OR RELIANCE UPON DATA CONTAINED HEREIN. NO WARRANTY, EITHER EXPRESS OR IMPLIED OF MERCHANTABILITY OR FITNESS OR OF ANY NATURE WITH RESPECT TO THE PRODUCT OR TO THE DATA HEREIN IS MADE HEREUNDER. DATA SHEETS ARE AVAILABLE FOR ALL TEXACO PRODUCTS. YOU ARE URGED TO OBTAIN DATA SHEETS FOR ALL TEXACO PRODUCTS YOU BUY, PROCESS, USE, OR DISTRIBUTE, AND ENCOURAGED TO ADVISE ANYONE WORKING WITH OR EXPOSED TO SUCH PRODUCTS OF THE INFORMATION CONTAINED HEREIN.

EXPLANATION OF THE INDUSTRIAL HYGIENE TOXICOLOGY, AND MATERIAL SAFETY DATA SHEET

#### PRODUCT INFORMATION

Trade Name and Synonyms

Refer to the code number and name under which the product is marketed and the common commercial name of the product.

Manufacturer's Name and Address Self explanatory.

Chemical Name and/or Family or Description

Refers to chemical, generic, or descriptive name of single elements and compounds.

For purposes of this form, a product is defined as hazardous if it possesses one or more of the following characteristics: (1) has a flash-point below 200 degrees Farenheit, closed cup or subject to spontaneous heating; (2) has a threshold limit value below 500 ppm for gases and vapor, below 5 mg/m<sup>3</sup> for dusts, fumes and mist, and below 25 MPPCF for mineral dust; (3) a single dose oral LD50 below 500 mg/kg; (4) causes burns to the skin in the short-term exposure or is systemically toxic by skin contact; (5) has been demonstrated to be a skin or eye irritant or causes respiratory irritation; (6) may cause skin or respiratory sensitization; (7) has teratogenic, mutagenic or other toxic effects; (8) may cause asphyxia or pneumonoconiosis: (9) in the course of normal operations may produce dusts, gases, fumes, vapors, mist, or smoke which have one or more of the above characteristics.

#### OCCUPATIONAL CONTROL PROCEDURES

#### **Protective Equipment**

Type of protective equipment that is necessary for the safe handling and use of this product,

#### Ventilation

Normal means adequate to maintain permissible concentrations.

Ventilation: type, i.e. local exhaust, mechanical, etc.

#### Permissible Concentrations

Indicates Threshold Limit Value (TLV) and / or Time Weighted Average (TWA) as established by the American Conference of Governmental Industrial Hygienists and/or standards promugated by the Occupational Safety and Health Administration.

#### **EMERGENCY AND FIRST AID PROCEDURES**

Gives first aid and emergency procedures in case of eye and/or skin contact, ingestion and inhalation.

#### PHYSIOLOGICAL EFFECTS

Acute Exposures (Eye, Skin, Respiratory System)

Refers to the most common effects that would be expected to occur from direct contact with the product.

#### Chronic

Refers to the effects that are most likely to occur from repeated or prolonged exposure.

#### Sensitizer

Means a substance which will cause on or in normal living tissue, through an allergic or photodynamic process, a hypersensitivity which becomes evident on reapplication of, or exposure to, the same substance.

Median Lethal Dose or Concentration (LD50,LC50)

Refers to that dose or concentration of the material which will produce death in 50 per cent of the animals. For inhalation, exposure time is indicated.

#### Irritation Index

Refers to an empirical score (Draize Method) for eye and skin irritation which tested by the method described. If numbers are not available, a yes or no answer indicates whether or not the material is an irritant.

#### FIRE PROTECTION INFORMATION

#### Ignition Temperature

Refers to the temperature in degrees Farenheit, at which a liquid will give off enough flammable vapor to ignite and burn continuously for 5 seconds.

#### Flash Point (State Method Used)

Refers to the temperature in degrees Farenheit, at which a liquid will give off enough flammable vapor to ignite.



#### Flammable Limits

Refers to the range of gas or vapor concentration (percent by volume in air) which will burn or explode if an ignition source is present. Lower means the lower flammable limit and upper means the upper flammable limit given in percent.

Products Evolved When Subjected to Heat or Combustion.

The products evolved when this material is subjected to heat or combustion. Includes temperature at which oxidation or other forms of degradation occurs.

Recommended Fire Extinguishing Agents and Special Procedures

Specifies the fire fighting agents that should be used to extinguish fires. If unusual fire hazards are involved or special procedures indicated, this is specified.

Unusual Fire or Explosive Hazards

Specific hazards to personnel in case of fire, explosive danger.

#### **ENVIRONMENTAL PROTECTION**

Specifies how this product can be successfully disposed of.

Indicates precautions necessary in the event that leakage or breakage occurs. Included are (a) clean-up procedures, (b) personal protective equipment if necessary, (c) hazards that may be created, i.e. fire, explosion, etc.

#### PRECAUTIONARY LABEL

Label that is required or recommended.

Requirements for Transportation, Handling and Storage

Specifies handling and storage procedures. Gives ICC, DOT, or other regulations related to safety and health for transportation.

#### CHEMICAL AND PHYSICAL PROPERTIES

**Boiling Point (or Range)** 

In degrees Farenheit or Celsius Boiling Point at 760 mmHg.

Vapor Pressure

Refers to pressure of saturated vapor above the liquid expressed in mm of Hg. at 20 degrees Celsius or 68 degrees Farenheit

#### Specific Gravity

The ratio of the density of the product to the density of water.

#### Vapor Density

The ratio of the density of the vapor at saturation concentrations ( 20 degrees Celsius or 68 degrees Farenheit to the density of air at 760 mmHg. )

#### Appearance and Odor

Refers to the general characterization of the material, e.g. powder, colorless liquid, aromatic odor, etc.

#### pН

Refers to the degree of acidity or basicity of the material in a specific concentration.

pH1-5 - strongly acidic pH5-7 - weakly acidic pH7-9 - weakly basic pH9-14 - strongly basic

#### Solubility

Refers to the solubility of a material by weight in water at room temperature. The terms negligible, less than 0.1 %; slight, 0.1 to 1%; moderate, 1 to 10%; appreciable, 10% or greater. Gives solubility in organic solvents where appropriate.

#### Percent volatile by volume

Refers to the amount volatized at 20 degrees Celsius or 68 degrees Farenheit when allowed to evaporate.

#### Evaporation

Gives the rate of evaporation compared to a standard

#### Viscosity

Measure of flow characteristics in Kinematic viscosity of Saybolt Universal Seconds.

#### Hazardous Polymerization

Hazardous polymerization is that reaction which takes place at a rate which produces large amounts of energy. Indicates whether it may or may not occur and under what storage conditions.

#### Does the Material React Violently

Indicates whether the material will react violently, releasing large amounts of energy when exposed under conditions listed.

#### Composition

Components of the product as manufactured.

Texaco Inc. 2000 Westchester Avenue White Plains, New York 10650 Phone (914) 831-3400 (Beacon)

# TEXACO INC. INDUSTRIAL HYGIENE, TOXICOLOGY, AND MATERIAL SAFETY DATA SHEET

NOTE: NO REPRESENTATION IS MADE AS TO THE ACCURACY OF THE INFORMATION HEREIN. SEE PAGE 5 FOR CONDITIONS UNDER WHICH DATA ARE FURNISHED.

Trade Name and Synor	nyms
01679 URSA OIL	EXTRA DUTY SAE 40
Manufacturer's Name	Emergency Telephone No.
Texaco Inc	(914) 831-3400 ext. 406
	eacon, NY 12508
Chemical Name and/or	Family or Description
Automotive Mot	or Oil
THIS PRODUCT IS CL	ASSIFIED AS:X NOT HAZARDOUS:
	BY DEFINITION NO.(S) ON ATTACHED EXPLANATION SHEET 4
WARNING STA	
WARN	ING: AVOID SKIN CONTACT WITH USED MOTOR OILS
OCCUPATIONA	AL CONTROL PROCEDURES
Protective Equipment (	
Eyes:	Chemical type goggles or face shield optional.
Skin:	Exposed employes should exercise reasonable personal cleanliness;
	this includes cleansing exposed skin areas several times daily with soap and water, and laundering or dry cleaning soiled work
	clothing at least weekly.
	erothing at rouse weekly.
Inhalation:	None required if exposures are within permissible concentrations;
	see below.
  -Ventilation Required:	Normal
Permissible Concentrat	ions:
· Air:	5 mg/cubic meter of air for mineral oil mist averaged over an
	8 hour daily exposure (ACGIH, 1982).
EMERGENCY A	AND FIRST AID PROCEDURES
First Aid Εγes:	As with most foreign materials, should eye contact occur, flush
1	eyes with plenty of water.
Skin:	None considered necessary.
JKIII.	None Considered necessary.
Ingestion:	None considered necessary.
Inhalation:	None considered necessary.
Other Instructions:	None.

N.D. - Not Determined N.A. - Not Applicable < Less Than > Greater Than

	TEXACO
PHYSIOLOGICA	Code No. 01679
Effects of Exposure	
Acute:	
Eyes:	N.D.Believed to be minimally irritating.
Skin:	N.D. Believed to be minimally irritating.
Respiratory System:	N.D. Believed to be minimally irritating if not in excess of permissible concentrations; see page 1.
Chronic:	See Additional Comments, page 4.
Other:	-
Sousifization Propertie	es:
Skin: Yes N	Jo Unknown X Respiratory: Yes No Unknown X
Median Lethal Dose (L	D 50LC 50)(Species)
Oral	N.D.; believed to be G.T. 5 g/kg (rat); practically non-toxic
Inhalation	N.D.
	N.D.; believed to be G.T. 3 $g/kg$ (rabbit); practically non-toxic N. D.
Irritation Index, Estim	ation of Irritation (Species)
Skin .	N.D.; believed to be L.T. 0.5/8.0 (rabbit); no appreciable effect
Eyes	N.D.; believed to be L.T. 15/110 (rabbit); no appreciable effect R.D.; None expected other than possible minimal irritation
	ION INFORMATION
Ignition Temp. F Flammable Limits%	N.D. Flash Point F. (Method) 440 F (COC)  Lower N.D. Upper N.D.
	en Subjected to Heat or Combustion:
FIGURES EAGINGS ANIS	Carbon monoxide, carbon dioxide, aldehydes and ketones, combus-
	tion products of nitrogen and sulfur.
Recommended Fire Ex	According to the National Fire Protection Association Guide, use water spray, dry chemical, foam, or carbon dioxide.  Water or foam may cause frothing. Use water to cool fire-exposed containers. If a leak or spill has not ignited, use water spray to disperse the vapors and to provide protection for persons attempting to stop the leak.
Unusual or Explosive	Hazards:

None.



## **ENVIRONMENTAL PROTECTION** Code No Waste Disposal Method: Under RCRA, it is the responsibility of the user of products to determine, at the time of disposal, whether product meets RCRA criteria for hazardous waste. This is because product uses, transformations, mixture, processes, etc. may render the resulting material hazardous. (See Remarks for Waste Classification) Procedures in Case of Breakage or Leakage: Contain spill if possible. Wipe up or absorb on suitable material and shovel up. Waste Classification: Product has been evaluated for RCRA charac-Remarks: teristics and does not meet criteria of a hazardous waste if discarded in its purchased form. PRECAUTIONARY LABEL WARNING: AVOID SKIN CONTACT WITH USED MOTOR OILS Used motor oils have caused skin cancer in laboratory animals when repeatedly applied and left in place between applications. In case of skin contact, promptly wash thoroughly with soap and water. Oil-soiled clothing should be cleaned before reuse. Requirements for Transportation, Handling and Storage: Minimum feasible handling temperatures should be maintained. Periods of exposure to high temperatures should be minimized. Water contamination should be avoided. DOT Proper Shipping Name: DOT Hazard Class (if applicable): N.A. CHEMICAL AND PHYSICAL PROPERTIES Boiling Point (°F) N.D. Vapor Pressure N.D. (mmHg) Specific Gravity 8762 (H<sub>2</sub>O=1) Vapor Density N.D. (Air=1) Appearance and Odor <u>bright and clear</u>

pH of undiluted product N.A. Solubility N.D. Evaporation N.D. ( Percent Volatile by Volume N.D. ) = 1 Viscosity 171.0 cSt @ 40 C Other \_\_\_\_ \_\_\_\_ Occur X Do not occur Hazardous Polymerizations The Material Reacts Violently With: (If Others is checked below, see Additional Comments on Page 4 for further details) Water Heat Strong Oxidizers Others None of These Х

TEX	ACO

COMPOSITION Code	01679
Components Presenting a Significant Hazard	9/6
None	
Other Components Mineral oil	% Greater than 95
Zinc dithiophosphate Methacrylate polymer Calcium sulfonate Sulfurized olefin	Less than 1 Less than 1 Less than 1 1 - 5
ADDITIONAL COMMENTS	
TEXACO INTENDS TO COMPLY FULLY WITH PROVISIONS OF THE TOXIC SUBSTANCES CONTROL AC	:T
STATE OF MICHIGAN CRITICAL MATERIALS ACT (REVISED 1982)  .10% zinc; conversion factor 7.5 lbs/gai.  New and used motor oils have been tested for potential carcinogenicity in laboratory mice. Only use were shown to cause skin cancer when repeatedly applied to mice without any effort to remove the applications. Strict compliance to the occupational control procedures outlined in this Data Sheet is be adequate protection from such hazards.	d motor oils material between
To determine applicability or effect of any law or regulation with respect to this product, user shou legal advisor or the appropriate government agency. Texaco does not undertake to furnish advice of the law	n such matters.
Date:       O1-07-83     New	

N.D. - Not Determined N.A. - Not Applicable < Less Than > Greater Than

NOTE: THIS DATA IS FURNISHED GRATUITOUSLY INDEPENDENT OF ANY SALE OF THE PRODUCT. ONLY FOR YOUR INVESTIGATION AND INDEPENDENT VERIFICATION. WHILE THE INFORMATION IS BELIEVED TO BE CORRECT, TEXACO INC. MAKES NO REPRESENTATION AS TO THE ACCURACY OF THE INFORMATION CONTAINED HEREIN. TEXACO INC. SHALL IN NO EVENT BE RESPONSIBLE FOR ANY DAMAGES OF WHATSOEVER NATURE DIRECTLY OR INDIRECTLY RESULTING FROM THE PUBLICATION OR USE OF OR RELIANCE UPON DATA CONTAINED HEREIN. NO WARRANTY, EITHER EXPRESS OR IMPLIED OF MERCHANTABILITY OR FITNESS OR OF ANY NATURE WITH RESPECT TO THE PRODUCT OR TO THE DATA HEREIN IS MADE HEREUNDER. DATA SHEETS ARE AVAILABLE FOR ALL TEXACO PRODUCTS. YOU ARE URGED TO OBTAIN DATA SHEETS FOR ALL TEXACO PRODUCTS YOU BUY, PROCESS, USE, OR DISTRIBUTE, AND ENCOURAGED TO ADVISE ANYONE WORKING WITH OR EXPOSED TO SUCH PRODUCTS OF THE INFORMATION CONTAINED HEREIN.

EXPLANATION OF THE INDUSTRIAL HYGIENE TOXICOLOGY, AND MATERIAL SAFETY DATA SHEET

#### PRODUCT INFORMATION

Trade Name and Synonyms

Refer to the code number and name under which the product is marketed and the common commercial name of the product.

Manufacturer's Name and Address Self explanatory.

Chemical Name and/or Family or Description

Refers to chemical, generic, or descriptive name of single elements and compounds.

For purposes of this form, a product is defined as hazardous if it possesses one or more of the following characteristics: (1) has a flash-point below 200 degrees Farenheit, closed cup or subject to spontaneous heating; (2) has a threshold limit value below 500 ppm for gases and vapor, below 5 mg/m<sup>3</sup> for dusts, fumes and mist, and below 25 MPPCF for mineral dust; (3) a single dose oral LD50 below 500 mg/kg; (4) causes burns to the skin in the short-term exposure or is systemically toxic by skin contact; (5) has been demonstrated to be a skin or eye irritant or causes respiratory irritation; (6) may cause skin or respiratory sensitization; (7) has teratogenic, mutagenic or other toxic effects; (8) may cause asphyxia or pneumonoconiosis: (9) in the course of normal operations may produce dusts, gases, fumes, vapors, mist, or smoke which have one or more of the above characteristics.

#### OCCUPATIONAL CONTROL PROCEDURES

#### Protective Equipment

Type of protective equipment that is necessary for the safe handling and use of this product.

#### Ventilation

Ventifation: type, i.e. local exhaust, mechanical, etc.

#### Permissible Concentrations

Indicates Threshold Limit Value (TLV) and / or Time Weighted Average (TWA) as established by the American Conference of Governmental Industrial Hygienists and/or standards promugated by the Occupational Safety and Health Administration.

#### EMERGENCY AND FIRST AID PROCEDURES

Gives first aid and emergency procedures in case of eye and/or skin contact, ingestion and inhalation.

#### PHYSIOLOGICAL EFFECTS

Acute Exposures (Eye, Skin, Respiratory System)

Refers to the most common effects that would be expected to occur from direct contact with the product.

#### Chronic

Refers to the effects that are most likely to occur from repeated or prolonged exposure.

#### Sensitizer

Means a substance which will cause on or in normal living tissue, through an allergic or photodynamic process, a hypersensitivity which becomes evident on reapplication of, or exposure to, the same substance.

Median Lethal Dose or Concentration (LD50,LC50)

Refers to that dose or concentration of the material which will produce death in 50 per cent of the animals. For inhalation, exposure time is indicated.

#### Irritation Index

Refers to an empirical score (Draize Method) for eye and skin irritation which tested by the method described. If numbers are not available, a yes or no answer indicates whether or not the material is an irritant.

#### FIRE PROTECTION INFORMATION

#### Ignition Temperature

Refers to the temperature in degrees Farenheit, at which a liquid will give off enough flammable vapor to ignite and burn continuously for 5 seconds.

#### Flash Point (State Method Used)

Refers to the temperature in degrees. Farenheit, at which a liquid will give off enough flammable vapor to ignite.



Flammable Limits

Refers to the range of gas or vapor concentration (percent by volume in air) which will burn or explode if an ignition source is present. Lower means the lower flammable limit and upper means the upper flammable limit given in percent.

Products Evolved When Subjected to Heat or Combustion.

The products evolved when this material is subjected to heat or combustion. Includes temperature at which oxidation or other forms of degradation occurs.

Recommended Fire Extinguishing Agents and Special Procedures

Specifies the fire fighting agents that should be used to extinguish fires. If unusual fire hazards are involved or special procedures indicated, this is specified.

Unusual Fire or Explosive Hazards

Specific hazards to personnel in case of fire, explosive danger.

#### ENVIRONMENTAL PROTECTION

Specifies how this product can be successfully disposed of.

Indicates precautions necessary in the event that leakage or breakage occurs. Included are (a) clean-up procedures, (b) personal protective equipment if necessary, (c) hazards that may be created, i.e. fire, explosion, etc.

#### PRECAUTIONARY LABEL

Label that is required or recommended.

Requirements for Transportation, Handling and Storage

Specifies handling and storage procedures. Gives ICC. DOT, or other regulations related to safety and health for transportation.

#### CHEMICAL AND PHYSICAL PROPERTIES

Boiling Point (or Range)

In degrees Farenheit or Celsius Boiling Point at 760 mmHg.

Vapor Pressure

Refers to pressure of saturated vapor above the liquid expressed in mm of Hg. at 20 degrees Celsius or 68 degrees Farenheit

#### Specific Gravity

The ratio of the density of the product to the density of water.

#### Vapor Density

The ratio of the density of the vapor at saturation concentrations ( 20 degrees Celsius or 68 degrees Farenheit to the density of air at 760 mmHg. )

#### Appearance and Odor

Refers to the general characterization of the material, e.g. powder, colorless liquid, aromatic odor, etc.

#### ρН

Refers to the degree of acidity or basicity of the material in a specific concentration.

pH1-5 - strongly acidic pH5-7 - weakly acidic pH7-9 - weakly basic pH9-14 - strongly basic

#### Solubility

Refers to the solubility of a material by weight in water at room temperature. The terms negligible, less than 0.1 %; slight, 0.1 to 1%; moderate, 1 to 10%; appreciable, 10% or greater. Gives solubility in organic solvents where appropriate.

#### Percent volatile by volume

Refers to the amount volatized at 20 degrees Celsius or 68 degrees Farenheit when allowed to evaporate.

#### Evaporation

Gives the rate of evaporation compared to a standard

#### Viscosity

Measure of flow characteristics in Kinematic viscosity of Saybolt Universal Seconds.

#### Hazardous Polymerization

Hazardous polymerization is that reaction which takes place at a rate which produces large amounts of energy. Indicates whether it may or may not occur and under what storage conditions.

#### Does the Material React Violently

Indicates whether the material will react violently, releasing large amounts of energy when exposed under conditions listed.

#### Composition

Components of the product as manufactured.

Texaco Inc. 2000 Westchester Avenue White Plains, New York 10650

Phone (914) 253-4000 (White Plains) (914) 831-3400 (Beacon)

# TEXACO INC. INDUSTRIAL HYGIENE, TOXICOLOGY, AND MATERIAL SAFETY DATA SHEET



NOTE: NO REPRESENTATION IS MADE AS TO THE ACCURACY OF THE INFORMATION HEREIN. SEE PAGE 5 FOR CONDITIONS UNDER WHICH DATA ARE FURNISHED.

Trade Name and Syno	
	R LUBT EP SAE 80W-90
Manufacturer's Name	Emergency Telephone No.
Texaco Inc	(914) 831-3400 ext. 406
· ·· +-+	eacon, NY 12508
	Family or Description
Gear Lubricant	
THIS PRODUCT IS C	V.
WARNING STATE	B BY DEFINITION NO.(S)ON ATTACHED EXPLANATION SHEETS
	ION: MAY CAUSE IRRITATION TO EYES
OCCUPATIONAL	CONTROL PROCEDURES
Protective Equipment Eyes:	(Type) Chemical type goggles or face shield optional.
Skin:	Exposed employes should exercise reasonable personal cleanliness; this includes cleansing exposed skin areas several times daily with soap and water, and laundering or dry cleaning soiled work clothing at least weekly.
inhalation:	None required if exposures are within permissible concentrations; see below.
Ventilation:	Normal
Permissible Concentra	tions:
Air:	5 mg/cubic meter of air for mineral oil mist averaged over an 8 hour daily exposure (ACGIH, 1983).
EMERGENCY AN	D FIRST AID PROCEDURES
First Aid Eyes:	Flush with water for fifteen minutes.
. Skin:	Wash exposed areas with soap and water.
Ingestion:	None considered necessary.
Inhalation:	None considered necessary.
Other Instructions:	None.

1



PHYSIOLOGICAL	EFFECTS:
Effects of Exposure Acute: Eyes:	Causes slight-moderate eye irritation.
Skin:	Slightly irritating with possible redness, edema, or drying of the skin.
Respiratory System:	Believed to be minimally irritating if not in excess of permissible concentrations; see page 1.
Chronic:	N.D.
Other:	-
Sensitization Propertie	rs:
	No Unknown _X Respiratory: Yes No Unknown _X
Median Lethal Dose (L Gral	Greater than 20.0g/kg (rat); practically non-toxic  N.D.  Greater than 20.0 g/kg (rabbit); practically non-toxic
irritation Index, Estima	ation of Irritation (Species)
Skin	1.67/8.0 (rabbit); slightly irritating 9.66/110 (rabbit); slightly irritating
Symptoms of Exposu	re See above.
FIRE PROTECTION	NINFORMATION
Ignition Temp. F.	N.D. Flash Point F. (Method) 360 F (COC)
Flammable Limits%	Lower N.D. Upper N.D.
Products Evolved vvn	en Subjected to Heat or Combustion: Carbon monoxide, carbon dioxide, aldehydes and ketones, combus-
	tion products of nitrogen and sulfur.
Recommended Fire E  Unusual or Explosive	xtinguishing Agents And Special Procedures: According to the National Fire Protection Association Guide, use water spray, dry chemical, foam, or carbon dioxide. Water or foam may cause frothing. Use water to cool fire-exposed containers. If a leak or spill has not ignited, use water spray to disperse the vapors and to provide protection for persons attempting to stop the leak. Hazards:
S. EASTER S. EASTERS IVE	None.



ENVIRONMENTA	L PROTECTION	Code No. 02315	
Waste Disposal Method: Under RCRA, it is the responsibility of the user of products to determine, at the time of disposal, whether product meets RCRA criteria for hazardous waste. This is because product uses, transformations, mixture, processes, etc. may render the result- ing material hazardous. (See Remarks for Waste Classification.)  Procedures in Case of Breakage or Leakage:			
	Avoid contact with eyes absorb on suitable mate	. Contain spill if possible. Wipe up or rial and shovel up.	
Remarks:		roduct has been evaluated for RCRA charac- meet criteria of a hazardous waste if sed form.	
PRECAUTIONAR	Y LASEL		
	CAUTION: MAY CAL	ISE IRRITATION TO EYES	
Avoid contact with eyes. Wash thoroughly after handling.			
Requirements for Transportation, Handling and Storage: Minimum feasible handling temperatures should be maintained. Periods of exposure to high temperatures should be minimized. Water contamination should be avoided.			
DOT Proper Shipping DOT Hazard Class (r	•		
CHEMICAL AND	PHYSICAL PROPERTIES		
Boiling Point (PF)	N.D.	Vapor Pressure N.D. (mmHg)	
Specific Gravity	.9030 (H <sub>2</sub> O=1)	Vapor Density N.D. (Air=1)	
Appearance and Odor RED, GREEN BLOOM			
pH of undiluted pro	duct N.A.	Solubility N.D.	
Percent Volatile by	Volume N.D.	Evaporation $N.D.$ ( )=1	
Viscosity <u>cSt</u> @	100 C = 14.55	Other	
		Do not occur ed below, see additional comments on page 4 for futher details) g Oxidizers Others None of These X	



COMPOSITION Code No.	02316
Components Presenting a Significant Hazard	%
None	
	İ
Other Components	%
Petroleum oil Methacrylate polymer	80 - 95 1 - 5
Additive package containing:	
chlorine, phosphorous, boron, nitragen	5 - 10
ADDITIONAL COMMENTS CARD CARD COMMENTS CARD CARD COMMENTS CARD CARD CARD CARD CARD CARD CARD CARD	
ADDITIONAL COMMENTS VALUE AND ADDITIONAL REPORT OF THE PROPERTY OF THE PROPERT	engraphic Tarlor and Salaria
TEXACO INTENDS TO COMPLY FULLY WITH PROVISIONS OF THE TOXIC SUBSTANCES CONTROL A STATE OF MICHIGAN CRITICAL MATERIALS ACT (REVISED 1984)  No critical materials present.	ACT
To determine applicability or effect of any law or regulation with respect to this product, user should consul-	t his
legal advisor or the appropriate government agency. Texaco does not undertake to furnish advice on such ma	iters.
By R. T. Richards Title Mgr. Env. Conservation & Toxicol	ogy
Date 01-13-83 New Revised, Supersedes	

4

N.O. - Not Determined N.A. - Not Applicable < Less Than > Greater Than



NOTE: THIS DATA IS FURNISHED GRATUITOUSLY INDEPENDENT OF ANY SALE
OF THE PRODUCT, ONLY FOR YOUR INVESTIGATION AND INDEPENDENT VERIFI—
CATION. WHILE THE INFORMATION IS BELIEVED TO BE CORRECT, TEXACO INC. MAKES NO REP
RESENTATION AS TO THE ACCURACY OF THE INFORMATION CONTAINED HEREIN. TEXACO INC.
SHALL IN NO EVENT BE RESPONSIBLE FOR ANY DAMAGES OF WHATSOEVER NATURE DIRECT—
LY OR INDIRECTLY RESULTING FROM THE PUBLICATION OR USE OF OR RELIANCE UPON DATA
CONTAINED HEREIN. NO WARRANTY, EITHER EXPRESS OR IMPLIED OF MERCHANTABILITY OR
FITNESS OR OF ANY NATURE WITH RESPECT TO THE PRODUCT OR TO THE DATA HEREIN IS
MADE HEREUNDER. DATA SHEET ARE AVAILABLE FOR ALL TEXACO PRODUCTS. YOU ARE
URGED TO OBTAIN DATA SHEETS FOR ALL TEXACO PRODUCTS YOU BUY, PROCESS, USE, OR
DISTRIBUTE, AND ENCOURAGED TO ADVISE ANYONE WORKING WITH OR EXPOSED TO SUCH
PRODUCTS OF THE INFORMATION CONTAINED HEREIN.

## EXPLANATION OF THE INDUSTRIAL HYGIENE TOXICOLOGY, AND MATERIAL SAFETY DATA SHEET

PRODUCT INFORMATION

Trade Name and Synonyms

Refer to the code number and name under which the product is marketed and the common commercial name of the product.

Manufacturer's Name and Address Self explanatory.

Chemical Name and/or Family or Description

Refer to chemical, generic, or descriptive name of single elements and compounds.

For purposes of this form, a product is defined as hazardous if it possesses one or more of the following charateristics: (1) has a flash-point below 200 degrees Farenheit, closed cup or subject to spontaneous heating; (2) has a threshold limit value below 500 ppm gases and vapor below 5 mg/m<sup>3</sup>for dust, fumes and mist, and below 25 MPPCF for mineral dust; (3) a single dose oral LD50 below 500 mg/kg; (4) causes burns to the skin in the short-term exposure or is systemically toxic by skin contact; (5) has been demonstrated to be a skin or eye irritant or causes respiratory irritation; (6) may cause skin or respiratory sensitization; (7) has teratogenic, mutagenic or other toxic effects; (8) may cause asphyxia or pneumoconiosis; (9) in the course of normal operations may produce dusts, gases, fumes, vapor, mist, or smoke which have one or more of the above characteristics; (10) is hazardous according to OSHA 1910.1200(g)(2)(vii).

OCCUPATIONAL CONTROL PROCEDURES (Consult your Industrial Hygienist or Occupational Health Specialist.)

Protective Equipment

Type of protective equiment that is necessary for the safe handling and use of this product.

Ventilation

Normal means adequate to maintain permissible concentrations.

Ventilation: type. i.e. local exhaust mechanical

Ventilation: type, i.e. local exhaust, mechanical, etc.

Permissible Concentrations

Indicates Threshold Limit Value (TLV) and / or Time Weighted Average (TWA) as established by the American Conference of Governmental Industrial Hygienists and/or standards promulgated by the Occupational Safety and Health Administration.

EMERGENCY AND FIRST AID PROCEDURES

Give first aid and emergency procedures in case of eye and/or skin contact, ingestion and inhalation.

PHYSIOLOGICAL EFFECTS

Acute Exposures (Eye, Skin, Respiratory System)

Refers to the most common effects that would be expected to occur from direct contact with the product.

Chronic

Refers to the effects that are most likely to occur from repeated or prolonged exposure.

Sensitizer

Means a substance which will cause on or in normal living tissue, through an allergic or photodynamic process, a hypersensitivity which becomes evident on reapplication of, or exposure to, the same substance.

Median Lethal Dose or Concentration (LD50,LC50)

Refers to that dose or concentration of the material which will produce death in 50 per cent of the animals. For inhalation, exposure time is indicated.

Irritation Index

Refers to an empirical score (Draize Method) for eye and skin irritation which tested by the method described, if numbers are not available, a yes or no answer indicates whether or not the material is an irritant.

FIRE PROTECTION INFORMATION

Ignition Temperature

Refers to the temperature in degrees. Farenheit, at which a liquid will give off enough flammable vapor to ignite and burn continuously for 5 seconds.

Flash Point (State Method used)

Refers to the temperature in degrees Farenheit, at which a liquid will give off enough flammable vapor to ignite.



Flammable Limits

Refers to the range of gas or vapor concentration (percent by volume in air) which will burn or explode if an ignition source is present. Lower means the the lower flammable limit and upper means the upper flammable limit given in percent.

Products Evolved When Subjected to Heat or Combustion.

The products evolved when this material is subjected to heat or combustion. Includes temperature at which exidation or other forms of degradation occurs.

Recommended Fire Extinguishing Agents and Special Procedures

Specifies the fire fighting agents that should be used to extinguish fires. If unusual fire hazards are involved or special procedures indicated, this is specified.

Unsusual Fire or Explosive Hazards

Specifies hazards to personnel in case of fire, explosive danger.

ENVIRONMENTAL PROTECTION

Specifies how this product can be successfully disposed of.

Indicates precautions necessary in the event that leakage or breakage occurs. Included are (a) clean-up procedures, (b) personal protective equipment if necessary, (c) hazards that may be created, i.e. fire, explosion, etc.

PRECAUTIONARY LABEL

Label that is required or recommended.

Requirements for Transportation, Handling and Storage

Specifies handling and storage procedures. Gives ICC, DOT, or other regulations related to safety and health for transportation.

CHEMICAL AND PHYSICAL PROPERTIES

Boiling Point (or Range)

In degrees Farenheit or Celsius Boiling Point at 760 mmHg.

Vapor Pressure

Refers to the pressure of saturated vapor above the liquid expressed in mm of Hg at 20 degrees Celsius or 68 degrees Farenheit.

Specific Gravity

The ratio of the density of the product to the density of water.

Vapor Density

The ratio of the density of the vapor at saturation concentration ( 20 degrees Celsius or 68 degrees Farenheit to the density of air at 760 mmHg. )

Appearance and Odor

Refers to the general characterization of the mathemal, e.g. powder, colorless liquid, aromatic odor, etc.

pН

Refers to the degree of acidity or basicity of the material in a specific concentration.

pH1-5 - STRONGLY ACIDIC pH5-7 - WEAKLY ACIDIC pH7-9 - WEAKLY BASIC pH9-14 - STRONGLY BASIC

Solubility

Refers to the solubility of a material by weight in water at room temperature. The term negligible, tess than 0.1 %; slight, 0.1 to 1%; moderate, 1 to 10%; appreciable, 10% or greater. Gives solubility in organic solvents where appropriate.

Percent Volatile by volume

Refers to the amount volatized at 20 degrees Celsius or 68 degrees Farenheit when allowed to evaporate.

Evaporation

Gives the rate of evaporation compared to a standard

Viscosity

Measure of flow characteristics in Kinematic viscosity of Saybolt Universal Seconds.

Hazardous Polymerization

Hazardous polymerization is that reaction which takes place at a rate which produces large amounts of energy. Indicates whether it may or may not occur and under what storage conditions.

Does the Material React Violently

Indicates whether the material will react violently, releasing large amounts of energy when exposed under conditions listed.

Composition

Components of the product as manufactured."

Texaco Inc. 2000 Westchester Avenue White Plains, New York 10650 Phone (914) 831-3400 (Beacon)

### MATERIAL SAFETY DATA SHEET

FUEL OIL NO. 6175 /

MSDS No.

Rev. Date 02/15/83



ARCO PETROLEUM PRODUCTS COMPANY DIVISION OF ATLANTIC RICHFIELD COMPANY 515 SDUTH FLOWER STREET LOS ANGELES, CALIFORNIA 90071 IMPORTANT: Read this MSDS before handling and disposing of this product and pass this information on to employees, customers, and users of this product

Trade Name	FUEL DIL NO. 6175			-	Telephone Numbers EMERGENCY	
Other Names	BUNKER "C" (WATSON); ASTM NO. 6 GRADE FUEL DIL (D-396); 312/333-3000 CDM RESIDUAL FUEL DIL; UTILITY FUEL DIL; HEAVY FUEL DIL.					
Chemical Family	PETROLEUM HYDROCAR	BONS		DOT Hazardous Mat	terials Proper Shipping Name	
Generic Name FUEL DIL NO. 6				DOT Hazard Class COMBUSTIBLE LIC	outo	
CAS No.	68553-00-4*	Company ID No.	1889518895	UNI	No. 1993	

#### CAUTION

MAY BE HARMFUL TO SKIN! MODERATELY TO SLIGHTLY COMBUSTIBLE!

AVOID SKIN CONTACT AND BREATHING MISTS OR VAPORS, ESPECIALLY WHEN HEATED.

SKIN CONTACT MAY CAUSE IRRITATION OR MORE SERIOUS SKIN DISORDERS. SIMILAR

DILS CONTAINING POLYCYCLIC AROMATIC HYDROCARBONS HAVE CAUSED SKIN CANCER ON

TEST ANIMALS. ANY SKIN IRRITATION SHOULD BE REPORTED TO MEDICAL PERSONNEL.

IF FLASH POINT IS LESS THAN 200F, IT IS AN OSHA CLASS II COMBUSTIBLE LIQUID

Flash Point (	Method) O* F	Autoignition Temperature (Method)	Flammable Limits (% Vol. in Air) At Normal Atmospheric Temperature and Pressure Lower AP 1 Upper AP 7
	IGHTING PROCEDURES	N/ AP	Lower AP 1 Upper AP 7
Unusual Fire and Explosion Hazards	THIS MATERIAL WILL REL IN CONFINED SPACES AND	COMBUSTIBLE. WHEN HEATED ABOVE EASE FLAMMABLE VAPORS WHICH CAN B EXPOSED TO A SOURCE OF IGNITION.  MPERATURES BELOW THE NORMAL FLASH MES.	BURN OR BE EXPLOSIVE MISTS OR SPRAYS
Extinguishing Media	DRY CHEMICAL AND CD2. EFFECTIVE BUT MAY CAUS		
Special Firefighting Procedures	FIRE SPACE WITHOUT PRO WORK UPWIND TO THE FIR THIS MAY INCLUDE SELF-	HIS MATERIAL, DO NOT ENTER ANY ENC OPER PROTECTIVE EQUIPMENT. IF FIR RE, RESPIRATORY PROTECTIVE EQUIPME -CONTAINED BREATHING APPARATUS TO HE NORMAL PRODUCTS OF COMBUSTION.	REFIGHTERS CANNOT ENT MUST BE WORN. PROTECT AGAINST THE

IV.		Health Hazards					
Primary Hazard	PROLONGED OR REPEATED C DISORDERS. EYE AND SKIN	ONTACT MAY CAUSE IRRITATION BURNS MAY RESULT FROM CONTA	OR MORE SERIOUS SKIN				
ROUTE OF E		SIGNS AND SYMPTOMS					
Inhalation	RESPIRATORY IRRITATION	FROM MISTS/VAPORS					
Eye Contact	EYE IRRITATION MAY RESU	LT FROM EITHER VAPORS AND/OR	R LIQUID CONTACT.				
Skin Absorption	N/AP						
Skin Irritation		IDENCE THAT THIS MATERIAL IS HYDROCARBONS HAVE CAUSED SK					
Ingestion	N/AP						
Effects Of Overexposure		EAVY FUEL OILS MAY CAUSE SEVERMATITIS OR MORE SERIOUS SED SKIN CONTACT.					
V.	Protective Equipment						
Respiratory	EXPOSURE EXCEEDS THE TL	RMAL CONDITIONS WITH ADEQUAT V. RESPIRATORY PROTECTIVE EC 0.134 AND IS NIOSH/MSHA APPRO	QUIPMENT MUST BE WORN	· .			
Ventilation	SPECIAL VENTILATION MAY ELEVATED TEMPERATURES.	BE REQUIRED FOR CONDITIONS	OF HANDLING AT				
Eye	CHEMICAL GOGGLES AND/OR AVOIDED (OR MATERIAL IS	R FACE MASK SHOULD BE WORN IS BEING HANDLED HOT).	F SPLASHING CANNOT BE				
Skin	BOOTS AND FACIAL PROTEC	DSSIBLE, IMPREVIOUS CLOTHING CTION MUST BE WORN. HANDS OF WITH MILD SOAP AND WATER AT	R OTHER POTENTIAL CONTA	ст			
Other		SLEEVES SHOULD BE WORN PROVI SHOULD BE KEPT CLEAN BY FREQ		AN			
VI.	Ос	cupational Exposure I	Limits				
1. Subs	tance		Source	Date			
• •	RECOMMENDED BY ARCO		RECOMMENDED E	3Y 1981			
Exposure Lim	nit Value/Time	Short Term Limit/Time	Peak Limit				
0.20	O MG/M3 / 8 HOURS						
2. Subs	stance		Source	Date			
Exposure Lin	nit Value/Time	Short Term Limit/Time	Peak Limit				



VII.	Emergency and First A	ld
Inhalation	IMMEDIATELY REMOVE FROM CONTAMINATED AREA TO FRESH AI	R.
Eye Contact	IMMEDIATELY FLUSH WITH CLEAN LOW PRESSURE WATER FOR A SEEK MEDICAL ATTENTION IF PAIN OR REDNESS PERSIST AFT	
Skin Contact	IF THE MATERIAL IS HOT, FLUSH CONTACTED AREA WITH PLE WATER TO COOL SKIN. REMOVE BY WIPING. USE WATERLESS BY SOAP AND WATER. SEEK MEDICAL ATTENTION FOR PROMPT	HANDCLEANER FOLLOWED
Ingestion	INGESTION IS UNLIKELY. HOWEVER, IF AMOUNTS ARE INGES MEDICAL ATTENTION. SEE NOTE TO PHYSICIAN.	TED, SEEK PROMPT
Note to Physician	HEAVY FUEL OILS CONTAIN MORE THAN 10% "PETROLEUM DIST	ILLATES".
VIII.	Spill and Disposal	
Precautions if Material is Spilled or Released	REMOVE ALL SOURCES OF IGNITION AROUND SPILL AREA. CLE AS POSSIBLE. USE ABSORBENT MATERIAL SUCH AS CLAY OR COVER AREA TO PREVENT SLIPS AND FALLS.	
Waste Disposal Methods	USE ABSORBENT MATERIAL SUCH AS CLAY OR DIATOMACEOUS E SPILL DISPOSE OF CONTAMINATED MATERIAL IN AN APPROVE COMPLY WITH FEDERAL, STATE AND LOCAL REGULATIONS CONC INTO LANDFILLS.	D DISPOSAL SITE. ,
IX,		ot be a complete components
Component	Name CAS No.	Composition amount (Wt.) (See Note on Page 4)
PETROLEUM	RESIDUUMS DISTILLATES	AP 0 TO 80 PERCENT AP 20 TO 100 PERCENT

Compositions given are typical values, not specifications.

7704-34-9 7727-37-9

7732-18-5

SULFUR

WATER

NITROGEN

HEAVY METALS (V, NI, FE, CU, ETC.)

0.05 PERCENT

2.5 PERCENT 2 PERCENT 1 PERCENT

GT 150'F (ETHER = 1) GT 1.0 N/AP  Freezing Point Vapor Pressure (MM HG AT 70'F) LT 1.0 Volatile Characteristics NEGLIGISLE  Specific Gravity (H, 0 = 1 at 39.2'F) Vapor Sp. Gr. (Air = 1.0 at 60' - 90'F) Solubility in Water Stability GT 10.0 Sus AT 122'F D2161  Hazardous Polymerization Viscosity Units, Temp., Method LT 1750 SUS AT 122'F D2161  PH N/AP  Other Physical and Chemical Properties  Appearance Additions CRACKED OR BURNT TO ASPHALTIC ODOR.  Conditions CRACKED OR BURNT TO ASPHALTIC ODOR.  Materials LIQUID CHLORINE AND OXYGEN.  Materials LIQUID CHLORINE AND OXYGEN.  HEAT AND OPEN FLAME.  Additional Precautions  INCOMPLETE COMBUSTION MAY FORM CARBON DIDXIDE, AND DECOmposition TRACE OXIDES AND/OR COMPDUNDS OF NITROGEN AND SULFUR, POSSIBLY HYDROGEN SULFIDE.  XI. Additional Precautions  PARTS AND EQUIPMENT USING OR CONTAINING THIS MATERIAL MUST BE CLEANED BY STEAMING PRIOR TO ALL MAINTENANCE PROCEDURES OR OPERATIONS. ALL MATERIAL SAMPLOR SHOULD BE CONDUCTED IN A MANNER WHICH AVOIDS VAPOR INHALATION.	Boiling Point  150 F  150 F  Evaporation Rate (Ratio of Time)  (ETRES = 1) GT  1.0 Dry Point (MAP) (Pressure (MM MG AT 70 F) LT  1.0 MEGISTELE Stability Mater AP 0.88  MEGISTELE STABLE  MATERIAL  MEGISTELE MEGI
Treezing Point    Vapor Pressure	Boiling Point ST   Soliting Point   Soliting Point Point   Soliting Point   Soliting Point   Soliting Point   Soliting Point Point Point   Soliting Point Point Point   Soliting Point Point   Soliting Point Point Point   Soliting Point
Treezing Point    Vapor Pressure	Boiling Point  ST   Stability
Treezing Point    Vapor Pressure	Desiling Point ST 150°F  Evaporation Rate (Ratio of Time) Specific Gravity (H, O = 1 at 39.2°F) Vapor Pressure (MM HG AT 70°F) LT 1.0  Specific Gravity (H, O = 1 at 39.2°F) Vapor Sp. Gr. (Air = 1.0 at 60° – 90°F) Specific Gravity (H, O = 1 at 39.2°F) Vapor Sp. Gr. (Air = 1.0 at 60° – 90°F) Specific Gravity (H, O = 1 at 39.2°F) Vapor Sp. Gr. (Air = 1.0 at 60° – 90°F) Specific Gravity (H, O = 1 at 39.2°F) Vapor Sp. Gr. (Air = 1.0 at 60° – 90°F) Specific Gravity (H, O = 1 at 39.2°F) Vapor Sp. Gr. (Air = 1.0 at 60° – 90°F) Specific Gravity (H, O = 1 at 39.2°F) Vapor Sp. Gr. (Air = 1.0 at 60° – 90°F) Specific Gravity (H, O = 1 at 39.2°F) Vapor Sp. Gr. (Air = 1.0 at 60° – 90°F) Specific Gravity (H, O = 1 at 39.2°F) Vapor Sp. Gr. (Air = 1.0 at 60° – 90°F) Specific Gravity (H, O = 1 at 39.2°F) Vapor Sp. Gr. (Air = 1.0 at 60° – 90°F) Specific Gravity (H, O = 1 at 39.2°F) Vapor Sp. Gr. (Air = 1.0 at 60° – 90°F) Specific Gravity (H, O = 1 at 39.2°F) Vapor Sp. Gr. (Air = 1.0 at 60° – 90°F) Specific Gravity (H, O = 1 at 39.2°F) Vapor Sp. Gr. (Air = 1.0 at 60° – 90°F) Vapor Sp. (Air = 1.0 at 60° – 90°F) Vapor Sp. (Air = 1.0 at 60° – 90°F) Vapor Sp. (Air = 1.0 at 60° – 90°F) Vapor Sp. (Air = 1.0 at 60°
Freezing Point  Vapor Pressure  (MM HG AT 70°F) LT 1.0  Specific Gravity (H, 0 = 1 at 39.2°F) Vapor Sp. Gr. (Air = 1.0 at 60° – 90°F) Solubility in Water Stability AP 0.98  Hazardous Polymerization ADT EXPECTED TO OCCUR  Viscosity Units, Temp., Method LT 1750 SUS AT 122°F D2161  PH N/AP  Other Physical and Chemical Properties  Appearance and Odor  CRACKED OR BURNT TO ASPHALTIC ODOR.  Conditions  to Avoid  Materials LIGUID CHLORINE AND OXYGEN.  INCOMPLETE COMBUSTION MAY FORM CARBON DIDXIDE. AND Decomposition  TRACE DXIDES AND/OR COMPDUNDS OF NITROGEN AND SULFUR, PDSSIBLY HYDROGEN SULFIDE.  XI.  Additional Precautions  Additional Precautions  PARTS AND EQUIPMENT USING OR CONTAINING THIS MATERIAL MUST BE CLEANED BY STEAMING PRIOR TO ALL MAINTENANCE PROCEDURES OR OPERATIONS. ALL MATERIAL MATERIAL SAMPLE STORMS FOULD BE CONDUCTED IN A MANNER WHICH AVOIDS VAPOR INHALATION and DR SKIN CONTACT. SPECIAL CARE MUST BE TAKEN W—1LE TRANSPORTING THE SAMPLE STORMS AUSDESS UNSERS UNSERS TO THE LABORATORY AND DURING SUBSECOURT LABORATORY HANDLING THE SAMPLE STORMS.	Physical and Chemical Data  Boiling Point GT 150'F
GT 150'F (ETHER = 1) GT 1.0 N/AP  Freezing Point Vapor Pressure (MM HG AT 70'F) LT 1.0 NEGLIGIBLE  Specific Gravity (H, 0 = 1 at 39.2' F) Vapor Sp. Gr. (Air = 1.0 at 60' - 90'F) Solubility in Water NEGLIGIBLE  AP 0.98 NEGLIGIBLE  Alazardous Polymerization NOT EXPECTED TO OCCUR  OT 1750 SUS AT 122'F D2161  Appearance DARK TO BLACK-COLORED, VISCOUS LIQUID: SLIGHTLY CRACKED OR BURNT TO ASPHALTIC ODOR.  Conditions to Avoid  Materials LIQUID CHLORINE AND OXYGEN.  HEAT AND OPEN FLAME.  STRONG ACIDS, ALKALIES, AND OXIDIZERS SUCH AS LIQUID CHLORINE AND OXYGEN.  Hazardous INCOMPLETE COMBUSTION MAY FORM CARBON DIDXIDE, AND Decomposition TRACE OXIDES AND/OR COMPOUNDS DF NITROGEN AND Products  SULFUR, POSSIBLY HYDROGEN SULFIDE.	Appearance DARK TO BLACK-COLORED, VISCOUS LIQUID: SLIGHTLY CRACKED OR BURNT TO ASPHALTIC ODOR.  DARK TO BLACK-COLORED, VISCOUS LIQUID: SLIGHTLY CRACKED OR BURNT TO ASPHALTIC ODOR.  Materials STRONG ACIDS, ALKALIES, AND OXIDIZERS SUCH AS LIQUID CHLORINE AND OXYGEN.  Materials INCOMPLETE COMBUSTION MAY FORM CARBON DIDXIDE, AND Decomposition TRACE DXIDES AND/OR COMPOUNDS OF NITROGEN AND Products  INCOMPLETE COMBUSTION MAY FORM CARBON DIDXIDE, AND DECOMPOSITION MAY FORM CARBON DIDXIDE, AND Products  INCOMPLETE COMBUSTION MAY FORM CARBON DIDXIDE, AND DECOMPOSITION MAY FORM CARBON DIDXIDE, AND Products  INCOMPLETE COMBUSTION MAY FORM CARBON DIDXIDE, AND DECOMPOSITION FACE DXIDES AND/OR COMPOUNDS DE NITROGEN AND Products  INCOMPLETE COMBUSTION MAY FORM CARBON DIDXIDE, AND DECOMPOSITION FACE DXIDES AND/OR COMPOUNDS DE NITROGEN AND Products  SULFUR, POSSIBLY HYDROGEN SULFIDE.
reezing Point  Vapor Pressure  (MM HG AT 70°F) LT 1.0  Pecific Gravity (H, 0 = 1 at 39.2°F)  Po .98  Viscosity Units, Temp., Method  OT EXPECTED TO OCCUR  DARK TO BLACK-COLORED, VISCOUS LIQUID: SLIGHTLY  CRACKED OR BURNT TO ASPHALTIC ODOR.  PART AND OPEN FLAME.  Conditions  Atterials  O Avoid  INCOMPLETE COMBUSTION MAY FORM CARBON DIDXIDE, AND TRACE OXIDES AND/OR COMPDUNDS OF NITROGEN AND  INCOMPLETE COMBUSTION MAY FORM CARBON DIDXIDE, AND TRACE OXIDES AND/OR COMPDUNDS OF NITROGEN AND	Physical and Chemical Data  Oiling Point  IT 150 F  Evaporation Rate (Ratio of Time) (ETHER = 1) GT 1.0  Pry Point N/AP  reezing Point Vapor Pressure (MM HG AT 70'F) LT 1.0  Precific Gravity (H, 0 = 1 at 39.2'F) Precific G
T 150°F (ETHER = 1) GT 1.0 N/AP  reezing Point  /AP  Vapor Pressure  (MM HG AT 70°F) LT 1.0 NEGLIGIBLE  Pecific Gravity (H, O = 1 at 39.2°F) Vapor Sp. Gr. (Air = 1.0 at 60° – 90°F) Solubility in Water NEGLIGIBLE  azardous Polymerization OT EXPECTED TO OCCUR  Viscosity Units, Temp., Method LT 1750 SUS AT 122°F D2161  Therefore Physical and Chemical Properties  DARK TO BLACK-COLORED, VISCOUS LIQUID: SLIGHTLY CRACKED OR BURNT TO ASPHALTIC ODOR.  DARK TO BLACK-COLORED, VISCOUS LIQUID: SLIGHTLY CRACKED OR BURNT TO ASPHALTIC ODOR.  DONIGHOUS HEAT AND OPEN FLAME.  STRONG ACIDS, ALKALIES, AND OXIDIZERS SUCH AS LIQUID CHILDRINE AND OXYGEN	Physical and Chemical Data  Oiling Point T 150'F  Evaporation Rate (Ratio of Time) (ETHER = 1) GT 1.0  Vapor Pressure (MM HG AT 70'F) LT 1.0  Pecific Gravity (H, 0 = 1 at 39.2'F) Vapor Sp. Gr. (Air = 1.0 at 60' - 90'F) Solubility in Water NEGLIGIBLE  azardous Polymerization OT EXPECTED TO OCCUR  Viscosity Units, Temp., Method LT 1750 SUS AT 122'F D2161  DARK TO BLACK-COLORED, VISCOUS LIQUID: SLIGHTLY CRACKED OR BURNT TO ASPHALTIC ODOR.  DARK TO BLACK-COLORED, VISCOUS LIQUID: SLIGHTLY CRACKED OR BURNT TO ASPHALTIC ODOR.  HEAT AND OPEN FLAME.  STRONG ACIDS, ALKALIES, AND OXIDIZERS SUCH AS LIQUID CHIORINE AND OXYGEN.
TO STABLE	Physical and Chemical Data  Oiling Point IT 150' F  Receiving Point IT 150'
To the preezing Point (ETHER = 1) GT 1.0 N/AP  Vapor Pressure (MM HG AT 70°F) LT 1.0 NEGLIGIBLE  Precific Gravity (H, 0 = 1 at 39.2°F) Vapor Sp. Gr. (Air = 1.0 at 60° – 90°F) Solubility in Water NEGLIGIBLE  Variation (N/AP) Stability (N/AP) Stability (N/AP) Stability (N/AP)  Viscosity Units, Temp., Method (N/AP) N/AP  Other Physical (N/AP) DARK TO BLACK-COLORED, VISCOUS LIQUID: SLIGHTLY	Physical and Chemical Data  Oiling Point IT 150'F  Evaporation Rate (Ratio of Time) (ETHER = 1) GT 1.0  Preezing Point I/AP  Preezing Point I/AP  Preecific Gravity (H, 0 = 1 at 39.2'F) Precific Gravity (H, 0 = 1 at 39.2'F) Free Gravity (H, 0 = 1 at 39.2'
To the preezing Point   Vapor Pressure   Volatile Characteristics   Vapor Pressure   Volatile Characteristics   Vapor Gravity (H <sub>2</sub> O = 1 at 39.2° F)   Vapor Sp. Gr. (Air = 1.0 at 60° - 90° F)   Solubility in Water   NEGLIGIBLE   STABLE   Vazardous Polymerization   Viscosity Units, Temp., Method   LT 1750   SUS AT 122° F D2161   N/AP   N/AP   N/AP	Oiling Point T 150'F  Evaporation Rate (Ratio of Time) (ETHER = 1) GT 1.0  Preezing Point  I/AP  Uapor Pressure (MM HG AT 70'F) LT 1.0  Precific Gravity (H, 0 = 1 at 39.2'F) P 0.98  Iazardous Polymerization IOT EXPECTED TO OCCUR  Physical and Chemical Data  Evaporation Rate (Ratio of Time) (ETHER = 1) GT 1.0  Volatile Characteristics NEGLIGIBLE STABLE  PH N/AP  PH N/AP
TO THER = 1) GT 1.0 N/AP  Vapor Pressure Volatile Characteristics NEGLIGIBLE  Pecific Gravity (H, O = 1 at 39.2°F) Vapor Sp. Gr. (Air = 1.0 at 60° - 90°F) Solubility in Water NEGLIGIBLE  azardous Polymerization Viscosity Units, Temp., Method  P 0.98 PH	Oiling Point IT 150°F  reezing Point I/AP  Pecific Gravity (H, 0 = 1 at 39.2°F) Vapor Sp. Gr. (Air = 1.0 at 60° - 90°F) Solubility in Water NEGLIGIBLE  azardous Polymerization  Physical and Chemical Data  Dry Point N/AP  Volatile Characteristics NEGLIGIBLE STABLE  PH
reezing Point  Vapor Pressure  (MM HG AT 70°F) LT 1.0  Volatile Characteristics  NEGLIGIBLE  Pecific Gravity (H, O = 1 at 39.2°F) Vapor Sp. Gr. (Air = 1.0 at 60° - 90°F) Solubility in Water Stability	Physical and Chemical Data    Colling Point   Evaporation Rate (Ratio of Time)   Dry Point   N/AP
T 150°F (ETHER = 1) GT 1.0 N/AP  'eezing Point Vapor Pressure Volatile Characteristics	Physical and Chemical Data  oiling Point T 150'F Evaporation Rate (Ratio of Time) (ETHER = 1) GT 1.0  Property of the property
T ABOUT THE TOTAL THE TOTA	Physical and Chemical Data  oiling Point Evaporation Rate (Ratio of Time) Dry Point

The information in this MSDS was obtained from sources which we believe are reliable. HOWEVER, THE INFORMATION IS PROVIDED WITHOUT ANY REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, REGARDING ITS ACCURACY OR CORRECTNESS.

The conditions or methods of handling, storage, use and dispose, of the product are beyond our control and may be beyond our knowledge. FOR THIS AND OTHER REASONS, WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS, DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE OR DISPOSAL OF THE PRODUCT.

Page 4 of 4

Rev No: 01

Issue No: 02

Print Date: 08/30/83

#### MATERIAL SAFETY DATA SHEET

#### A.P. GREEN REFRACTORIES CO.

Green Boulevard, Mexico, Missouri 65265

Tel. 314-473-3626

Product Name: 'SAIRSET Product Type: Wet Air Setting Fireclay
Mortar

#### Product Chemical Analysis:

	S10 <sub>2</sub>	58.0-61.0
	A1,6	32.0-35.0
	$Fe_2^2O_2^3$	1.0-2.0
	CaO 3	0.1-0.6
	MgO	0.1-0.6
.7	T10	1.5-2.5
	NaKÓ	2.0-3.0
	Plus Water	1 to 5

#### Product Proximate Analysis (Ingredients):

Calcined Kaolin	50	to	60%
Silica	5	to	15
Clay	10	to.	15
Liquid Sodium Silicate	17	to	25
Water (extra)	1	to	5

#### Potential Health Hazard Data:

- 1. This product is shipped and used wet so no dust is generated.
- 2. This product contains 6 to 16% of quartz. It also probably contains 6 to 15% cristobalite contributed by the calcines. This cristobalite would occur in the glassy bond of the product's calcines and the cristobalite crystallites are not mechanically separate unless the product is ground extremely fine.
- 3. The product's sodium silicate may cause drying out and chapping of the skin and would irritate the eyes if it entered them.

#### Recommended Disposal Method:

- 1. Normal housekeeping procedures should be followed in the event of spilled mortar.
- Waste material may be removed to an approved landfill or dump.

#### Recommended Handling Procedures:

- 1. Wear standard safety glasses.
- 2. Wear gloves to protect hands from chapping.
- 3. In case of contact with skin or eyes the contacted area should be immediately washed thoroughly with water.
- 4. Safety shoes may be worn to protect feet from dropped containers.
- 5. Avoid breathing of dust during refractory tear-out after service.

This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A.P. Green Refractories or not. This information is offered solely for use in your evaluation of this product in respect to safety, health and environmental hazards.

#### MATERIAL SAFETY DATA SHEET

A.P..GREEN REFRACTORIES COMPANY.
Green Boulevard, Mexico, Missouri 65265
Tel. 314-473-3626

<u>Product Name</u>: MC-22 <u>Product Type</u>: High Strength Fireclay

Castable

#### Product Chemical Analysis:

SiO,	39.0	-	42.0%
A1262	40.0	-	43.0
A1203 Fe203 Ca0	3.5	-	4.5
CaÓ 3	11.0	-	12.0
Mg0	0.1	-	0.6
TiO <sub>2</sub>	1.5	_	2.5
NaKÔ	0.5	_	1.0

#### Product Proximate Analysis (Ingredients):

Firebrick Grog	55	to	70%
Calcined Flint Clay	5	to	15
Refractory Cement	25	to	40

#### Potential Health Hazard Data:

- 1. This product contains 0 to 1% quartz. It also probably contains 6 to 18% cristobalite contributed by the calcines and grog. The cristobalite would occur in the glassy bond of the product's calcines and grog; the cristobalite crystallites are not mechanically separate unless the product is ground extremely fine.
- 2. This product's cement may cause drying out and chapping of the skin, and would irritate the eyes if it entered them.

#### Recommended Disposal Method:

- Normal housekeeping procedures should be followed in the event of spilled castable.
- Waste material may be removed to an approved landfill or dump.

#### Recommended Handling Procedures:

- 1. Wear standard safety glasses.
- 2. Avoid breathing of dust while handling dry material.
- Wear gloves to protect hands from chapping.

- 4. In case of contact with skin or eyes the contacted area should be washed thoroughly with water.
- 5. Safety shoes may be worn to protect feet from dropped containers.
- 6. Avoid breathing of dust during refractory tear-out after service.

This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Refractories or not. This information is offered solely for use in your evaluation of this product in respect to safety, health and environmental hazards.



## MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 1 OF 2

ZEP MANUFACTURING COMPANY 3ST IN MAINTENANCE PRODUCTS DATE : 11/83 SUPERSEDES: 05/79

PRODUCT NUMBER: 0626

SECTION I - EMERGENCY CONTACTS

P.O. BOX 2015

ATLANTA, GEORGIA 30301

TELEPHONE (404)352-1680

ZEP MANUFACTURING COMPANY NON-OFFICE HOURS, WEEKENDS, AND HOLIDAYS: AREA CODE 404 435-2973, 996-0899, 252-1587, 351-2952, 971-3367 LOCAL POISON CONTROL CENTER ...........

TRANSPORTATION EMERGENCY

BETWEEN 8:00A.M.-5:00P.M. CHEMTREC: TOLL FREE 1-800-424-9300 ALL CALLS RECORDED (EASTERN TIME ZONE) DISTRICT OF COLUMBIA (202)483-7616 ALL CALLS RECORDED

SECTION II - HAZARDOUS INGREDIENTS CAS REGISTRY NO.

7 . . .

1 NONE

SECTION III - PHYSICAL DATA

JILING POINT(F):

SPECIFIC GRAVITY:

1.025

)

VAPOR PRESSURE (MMHG.): N/A

PERCENT VOLATILE, BY VOLUME (%):

^50

VAPOR DENSITY(AIR≔1): N/A

EVAPORATION RATE(

#1): SLOW

SOLUBILITY IN WATER: SLIGHT

PH(CONCENTRATE):

7.5-8.5

PH(USE DILUTION OF

):N/A

APPEARANCE & ODOR : BUFF COLORED LIQUID - BLAND

SECTION IV - FIRE AND EXPLOSION DATA

FLASH POINT (METHOD USED): NONE

FLAMMABLE LIMITS : LEL N/A

UEL N/A

EXTINGUISHING MEDIA: NORMAL.

SPECIAL FIRE FIGHTING: NORMAL

UNUSUAL FIRE HAZARDS: NONE

SECTION V - HEALTH HAZARD DATA

SYMPTOMS

SKIN: CAN CAUSE IRRITATION UPON PROLONGED CONTACT.

EYES: CAN BE IRRITATING UPON CONTACT.

INHALE: CAN CAUSE DIZZINESS AND NAUSEA UPON PROLONGED EXPOSURE.

INGESTICAN CAUSE NAUSEA AND VOMITING.

FIRST AID

WASH FROM SKIN WITH SOAP AND WATER. SKIN:

FLUSH IMMEDIATELY WITH PLENTY OF WATER FOR 15 MINUTES. CONSULT PHYSICIAN. HALE: MOVE TO FRESH AIR. ADMINISTER ARTIFICIAL RESPIRATION, IF NEEDED. SEE DOCTOR

INGEST: DO NOT INDUCE VOMITING. SEEK MEDICAL ATTENTION IMMEDIATELY.

TLV NONE ESTABLISHED

Appendix33-000065

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material. Safety Data Sheets for this product so that your files remain up-to-date.



Adding .

PARELL TENSTITY (6 | R-1:: N/G

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

#### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

SEE BINISH WE'S

CAR: Carcinogen-Considered a potential or confirmed cancer pausing agent by either the National Toxicology Program (NTP).

the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive-Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL: Flammable—At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation-A primary route of exposure through breathing of vapors (see below).

IRR: Irritant-Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable-Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit-The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value-A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic-The probable lethal dose for a 70 kg man is que ounce or more. CAMPINE AND AND SERVICE OF THE PARTY OF THE

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note with that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This timeweighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals on to anyone with an existing medical condition or who may be the pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided strictly for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized. systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. Their "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death.

Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

#### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.



## MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 2 OF 2

ZEP MANUFACTURING COMPANY 'ST IN MAINTENANCE PRODUCTS DATE : 11/83 SUPERSEDES: 05/79

PRODUCT NUMBER: 0626

Control of the State of

SECTION VI - REACTIVITY DATA

STABILITY: INCOMPATIBILITY(AVOID): POLYMERIZATION: HAZARDOUS DECOMPOSITION: STABLE NONE WILL NOT OCCUR

NONE

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

ABSORB SPILL WITH AN INERT ABSORBENT MATERIAL (I.E. ZEP-O-ZORB); PICK UP AND DEPOSIT IN A SEALABLE, D.O.T. SPECIFIED, CONTAIN FOR DISPOSAL AS A HAZARDOUS THOROUGHLY CLEAN AREA WITH A DETERGENT SOLUTION. RINSE AREA THOROUGHLY WITH CLEAN WATER.

#### WASTE DISPOSAL METHOD

CHECK LOCAL, STATE AND FEDERAL REGULATIONS PRIOR TO DISPOSAL. PRODUCT IS NOT CONSIDERED A HAZARDOUS WASTE UNDER RCRA. IT MAY BE PERMISSIBLE TO DISPOSE OF LIQUIDS BY FLUSHING THEM INTO A SANITARY SEWER WITH PLENTY OF WATER. POWDERS SHOULD BE DRUMMED UP AND HAULED TO A LANDFILL OR PUT INTO A SOLUTION WITH WATER AND FLUSHED INTO A SANITARY SEWER. NEUTRALIZATION OF PH MAY BE A PREREQUISITE DR SEWER DISPOSAL.

FEDERAL HAZARDOUS WASTE NUMBER(S):N/A

SECTION VIII - S P E C I A L PROTECTION INFORMATION

RESPIRATORY PROTECTION:

NOT REQUIRED

VENTILATION:

NORMAL

PERSONAL PROTECTIVE EQUIP. : NONE REQUIRED

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN WHEN HANDLING AND STORING:

KEEP FROM FREEZING.

OTHER PRECAUTIONS:

KEEP OUT OF REACH OF CHILDREN.

TO HAMPING A CO.

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date,



By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product, The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows: SHORT STATE OF THE REST

#### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

第一次的 法公司的法 熱調電影

CAR: Carcinogen-Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible-At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant. 19 Jan 2017 10 BRACE VOL BERAIT LIST OF BUILDING

COR: Corrosive-Causes irreversible alterations in living tissue (e.g. burns).

EIR; Eye irritant Only-Causes reversible reddening and/or inflammation of eye tissues and a red and reddening and/or inflammation of eye tissues and a reddening a red

Est'd: Estimated.

FBL. Flammable—At temperatures under 1000F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 lb.) man is one teaspdonful or more. ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation—A primary route of exposure through breathing of vapors (see below).

IRR: Irritant-Causes reversible effects in living tissues (e.g. inflammation). ART HM LIBROUGHT IN THE CAUSE OF THE CAUSE

N/A: Not Applicable-Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for this item.

PEL: Permissible Exposure Limit-The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer—Causes allergic reaction after repeated exposure.
SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value—A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This timeweighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the second Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Boute of Entry-this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized systemic or specific-organ toxic effect. systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions. \$1.两位1.营业运输水上图景标和

#### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.

16

# MATERIAL SAFETY DATA SHEET



HARBISON-WALKER REFRACTORIES
Obtains of Oversion Industries, Inc.,

2 Gateway Center, Pittsbergh, Pennsylvania 16222

TELEPHONE: (412) 562-6200 TELETYPE: 710-664-4347

10/01/84

#### DISCLAIMER

This data sheet is based on OSHA FORM 20 but modified to more adaquately suit refractory products. All data are subject to reasonable variation. This information is supplied in good faith by Harbison-Walker and is applicable to the product as shipped. Your application of the product may change its characteristics. THE DATA PROVIDED HEREIN ARE BELIEVED CORRECT OR ARE OBTAINED FROM SOURCES BELIEVED TO BE GENERALLY RELIABLE. HARBISON-WALKER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF THIS PRODUCT, AND HARBISON-WALKER ASSUMES NO OBLIGATION OR LIABILITY FOR RELIANCE ON THE INFORMATION CONTAINED IN THIS DATA SHEET. This data is not part of any contract or condition of sale. It is solely supplied as an accommodation to the buyer.

و الشروع المراجع المرا					
SECTION I - PRODUCT IDENTIFICATION					
Freduct Tradename: Type of Refractory:					
H-W LIGHTWEIGHT CASTABLE 26	High Alumina Insulating Castable				
*For chrome containing refractories, indicate approximate percents    Contains chrome ore consisting predominantly of the mineral chrom   Contains chromium ill exide	ge, and check explicable block. nile (MgFe).0.(AlFeCr) <sub>2</sub> O <sub>3</sub>				

			TON IT - HAZARDO	And HANGAGIS		
RE CHECKED BLOCKS INGREDIENT	GEN. CHEM. FORMULA	C.A.S. NUMBER	Percentage Range	OSHA P.E.L.	ACGIH TEVO	NIOSH CRITERIA
9 Quanz	SiO <sub>2</sub>	901317799		10 mg/m <sup>3</sup> % Respirable Quartz +2	0.1 mg/m³	75-120
Cristobulite	SiO <sup>2</sup>	14464-46-1		½ Quartz Value	0.05 mg/m³	75-120
] Tridymite	54O <sub>2</sub>	15468-32-3		½ Quartz Value	0.05 mg/m³	75-120
2 Fysed Silica	sio <sub>2</sub>	G07631869		NONE	Use Quartz TLV	75-120
3 Coal Tar Products	N/A	MX\$001589		0.2 mg/m <sup>3</sup>	SAME	78-107
🕽 Petrolaum Pitch	N/A	MX8052424		NONE	5.0 mg/m³	78-106
Phosphoric Acid	ную,	907664382		1.0 mg/m <sup>3</sup> (mist)	SAME	NONE
D Ume	C+O	001305788		5.0 mg/m <sup>3</sup>	2.0 mg/m³	NONE
) Sodium Silicate	03-Si .2Na	006434920		NONE .	NONE	NONE
3						
<b>3</b>						
כ						

	SECTION III - PHYSICAL DATA					
Appearance and Oder: Off-white color; earthy odor.						
Specific Gravity: 0	. 75	F	pH: <u>ND</u>			
Solubility in Water: whole Constituents; https:	Slightly soluble. Calcium Aluminate	Cement				

SECTION	IV .	FIRE	AND	FXPL	OSION	DATA

UNLESS OTHERWISE NOTED, NONE. Product is a refrectory.

NOTES:

	SECTION V - HEALTH	HAZARD DAYA"								
"SHE CHECKED BLOCKS				e required						
INGREMENT	EFFECTS OF C	OVEREXPOSURE	PROLONGED	SHORT TERM						
3 Free Crystelline Silica	Delayed lung fibrosis - silicosis		V							
☐ Coal Tar Products	Skin, lung, muceus membrane carcinegen		<u> </u>							
	Skin irritation; photosensitization		<del> </del>	<u>V</u>						
☐ Petreleum Pitch	(Same as Coal Tar Products)			· · · · · · · · · · · · · · · · · · ·						
□ Lime	irritant to skin, eyes, mucous membranes, etc	i.		<u> </u>						
Phosphoric Acid	Primary Irritant - skin, eyes, etc.			V						
Spelium Silicate	irritant to skin, eyes, muceus membranes, et			V						
0										
α			•							
	n skin or flush from oyes using copious amount		oum pitch.							
	SECTION VI - REA	CTIVITY DATA								
STABILITY: W. STABLE D UNSTABLE Incomparability (materials to avoid) Store in dry area prior to use. Huzardous decomparation: D may occur & will not occur										
f	SECTION VII - SHILL AI	NO LEAN PROCEDURES		<u>_</u>						
Mest refractory products disposal procedures may disposal information. COMMENTS:	may be landfilled. However, since your applicat vary with locale and are subject to change, yo	ion of this product may change its chemical ch ou should consult the governmental authority	aracteristics, a having jurisdi	nd since ction for						
	SECTION VIII - SPECIAL PRO	OTECTION INFORMATION								
RESPIRATORY PROTECTION	ON (CHECK TYPE): Approved Dust C	Other (Specify):		·						
VENTILATION: Lecal extraord ventilation should be provided if routine operation generated dust in excess of allowable limits  PROTECTIVE GLOVES (CHECK TYPE):   Acid Resistant   impermeable   Abrasion Resistant   Other (Specify):  EYE PROTECTION: Approved safety glasses, gaggios or foceshields should be used when handling refractory products.  POOT PROTECTION (CHECK TYPE):   Metatorsal safety   Impermeable  PROTECTIVE CLOTHING (SPECIFY):										
	SECTION IX - SPECI	AL PRECAUTIONS								
☐ If block is checked, p ☐ Other (Specify):	roduct contains coal tar products. Workers show	rld not be exposed to furnace "burn-in" vela	tiles.							
		MARKET AND THE STATE OF THE STA								

## MATERIAL SAFETY DATA SHEET SECTION I

		SECTION	1				
PODUCT NAME OR NUMBER	CY TELEPHONE NO. 2-7701						
MANUFACTURER'S NAME ZYNOLYTB PRODUCTS COMPANY  MANUFACTURER'S NAME						CTURER'S D-U-N-S NO.	
ADDRESS (Number, Street, City, State	and Zip C	ode)				77	
2320 5 DOMINGUE HAZARDOUS MATERIALS DESCRIPTION CONSUMER COMMOD	ON AND P	•	R 172.	101) (4	AZARD CLASS (49	CFR 172.101)	
CHEMICAL FAMILY		terosor opray rame,	FOF	RMULA			
N/A					N/A		
SECTION	<u>۱۱۰</u>	INGREDIENTS (	list	all ing	redients)	CAS REGISTRY NO.	*
Paint Solids- Contain	s no l	ead, arsenic, antimo	ny o	r othe	r toxic		
metals.						mixture	5-20
V M ε P Naptha ε 2	00 Thi	nner				mixture	5-20
Xylene & Toluol						mixture	0-9
Methylene Chloride						75092	30-45
Isobutane Propane P	ropella	nt				mixture	25-35
				·			
h							
	· 			,			<u> </u>
		CTION III — PHY	SIC	AL D	ATA		
BOILING POINT ( °F) ( °C)	-46°F	SPECIFIC GRAVITY (H2O=1)		0.8			
VAPOR PRESSURE (mm Hg) [XX] (psi)	105- 70°F	PERCENT VOLATILE BY VOLUI		80-95			
VAPOR DENSITY (AIR=1)	< 1	EVAPORATION RATE ( ETHE	<b>R</b> =1)	<1			
SOLUBILITY IN WATER	nil	pH=		n.a	·		
APPEARANCE AND ODOR Spray Ename!- V M	εРε	Toluol odor.			IS MATERIA GAS	AL: (LIQUID) PASTE POWDE	SOUD ER
SECTIO	N IV-	FIRE AND EXPLO	SIC	N H	AZARD D	ATA	
FLASH POINT (method used) ( x°F	) - <b>13</b> 5	FLA	MAB	LE LIMITS	LEL 1. Ř	UEL 2.2	
EXTINGUISHING MEDIA Fram, C	arbon	Dioxide, Dry Chemic	cals-	Class	B fire ext,	for or water c	pray
SPECIAL FIRE FIGHTING PRICEDURE	s Full	protective equipmen	t ind	luding	self contai	ned breathing	
		. Water spray may	oe in	nefect	ive.		
UNUSUAL FIRE AND EXPLOSION HAZ	ARDS (	San may explode if i	ncine	erated	- Do not sp	ray near heat	
or open flames.					, , , , , , , , , , , , , , , , , , ,		
	SECT	TION V-HEALTH H	łΑΖ	ARD	DAŤA		
		, headache, dizzines			IOLD LIMIT VALUE SIBLE EXPOSURE		PPM
stagering git, con		, unconsciouness.	, 				
EMERGENCY AND FIRS AID PROCE	DURES	Remove from exposu	re,	restor	e breathing,	, keep warm an	d

					<u> </u>									
STABILITY	UNST	ABLE		CONDI	TIONS	TO AVOI	Do n	ot sto	re a	bove 12	o°F.	Avoid s	praying nea	r
	STAI		х	·	t, sp	parks	and oper	n flam	es.		-			
INCOMPAT														
RDO	US DECO	MPOSII	TION PR	ODUCT	'S:						,			
HAZARDO	ļ	MA	Y OCCL	JR .		CONDITI	ONS TO AV	OID (	Cont	ents un	<u>der pr</u>	essure.	Do not	
POLYMERI	ZATION	WILL	NOT OC	CUR	_x_				_pu	octure				
			SE	ECT	ION	VII-S	PILL O	R LE	ΑK	<b>PROC</b>	EDU	RES		
steps to								Remov arks.	e al	l source ntain ar	s of i	gnition ove with	(flame, hot n inert absor	bent
MASTE DIS	sparki SPOSALI	ng to	`											
Incine	rate i	n apo	orove	Dispo d fac	ose_u cility	ı_acco . Do n	<u>rgance v</u> lot incin	<u>vitn ic</u> erate	close	<u>state a</u> ed conta	ing rec	<u>ierai re</u>	gulations.	
		<u> </u>				<del></del>								
Second 1							IAL PF							
partic	ORY PRO <b>Jos of</b>	FECTION -OVER	1 (specif <del>'SDL'a</del> )	y type) <del>z du</del> i	Appı Lina	roved applica	mechanic	cal fill	ter i	respirato	or to r	remove :	solid airborn	e
VENTILATI	- 1	USE	in we	(Speci	ty Răte) en tila	ted ar	eas.				SPECIA	l 		
	M		ICAL (G	eneral)	(Specify	Rate)					OTHER			
PROTECTIV								EYE PRO	OTECT	ON Spla	sh pro	oof eye	goggles reco	mmended
OTHER PR	OTECTIVE	EQUIP	MENT	<u>.</u>		<b></b>								
				SE	CTI	(I NO	K-SPEC	IAL	PRE	CAUT	IONS	;		
PREÇAUTI	ONS TO	BE TAKE	N IN HA	MDLIN	G AND	STORING	DO	NOT S	sto	RE ABO	VE 12	0°F		
OTHER PR	ECAUTIO	NS												
			<u>N.,</u>	Α		<del></del>								
<del> </del>			Sel	ler agr	ees not	to assert	any claim (o	ther ther	a cla	im for a nate	ent infring	ement)		
			aga	inst Ge	neral M	fotors Cor	poration for nnection wit	any use o	r discl	osure of any				
PLEASE CO		QUEST	IAMMOIT	RE				Name (	print)	Huber	t H. 1	K im		
								Signatu	re	10	m	na	~	
								Title		Proce	ss Eng	jineerin	, Manager	
						· · · · · · · · · · · · · · · · · · ·		Date		Febru	ary 6	, 1985.	<b>\</b>	
LOCATIO	N CISCO	CODE	Ш		]	FO	R GM	USE	ON	ILY		· · ·		
GM IDEN	-		ES USE	D AT TI	٦ ( ( ( (	ATION:				9 9 8				
	OMMON . CODE [		N-CODE	D ITEM		 R PRODU	ICTION PART	T NUMBE	R 🔲	: 🔲				
LASS	IFICATIO	N OF US	SF.					-						
	SOLVENT COATING DEODOR			FLUX			ABSORBA ABRASIV	E		INSULATOR LUBRICANT POLISH				量

#### DOW CORNING CORPORATION MATERIAL SAFETY DATA SHEET

EMERGENCY PHONE NO.: (517) 496-5900

SECTION I

PRODUCT NAME OR NUMBER:

MANUFACTURERS NAME: DOW CORNING CORPORATION

ADDRESS:

SOUTH SAGINAW ROAD

MIDLAND, MICHIGAN 48640

PROPER SHIPPING NAME (49 CFR 172.101): NONE

D.O.T. HAZARD NAME (49 CFR 172.101): NONE

D.O.T. ID NO. (49 CFR 172.101): N.A.

D.O.T. HAZARD CLASS (49 CFR 172.101): NONE

RCRA HAZARD CLASS - if discarded (40 CFR 261): NONE

E.P.A. PRIORITY POLLUTANTS (40 CFR 122.53): NONE

HEALTH (NFPA): 1 CAS NO.: Mixture FLAMMABILITY (NFPA): 1 GENERIC DESCRIPTION: SILICONE REACTIVITY (NFPA): 1 DCWC: 55

SECTION II INGREDIENTS AND AND LEGISLATION OF THE SECTION OF THE S

YAZARDOUS
X RANGE

CETOXYSILANE
5

10ppm \*

\* Based on Acetic Acid; 
SECTION III HEALTH HAZARD DATA HEALTH (NFPA): 1

EFFECTS OF OVEREXPOSURE: Irritates eyes. Prolonged or repeated contact may irritate skin.

THRESHOLD LIMIT VALUE OF PRODUCT: 10ppm (Based on liberated Acetic Acid)

EMERGENCY AND FIRST AID PROCEDURES: Wipe off. Flush with water. Obtain medical attention for eyes in necessary. The state of the state o

SECTION IV FIRE AND EXPLOSION HAZARD DATA FLAMMABILITY (NFPA): 1

FLASH POINT (O.C.): >250°F

FLAMMABLE LIMITS IN AIR, % BY VOLUME: LOWER: Not applicable

UPPER: Not applicable

RXTINGUISHING MRDIA: Carbon Dioxide or Foam

SPECIAL FIRE FIGHTING PROCEDURES: Self contained breathing apparatus and

protective clothing should be worn in fires.

involving chemicals.

MUSUAL FIRE AND EXPLOSION HAZARDS: None known to DOW CORNING

(R) INDICATES REGISTERED OR TRADEMARK NAME OF DOW CORNING CORPORATION PAGE 1

# DOW CORNING CORPORATION MATERIAL SAFETY DATA SHEET

NAME OR NUMBER: DOW CORNING(R) GENERAL PURPOSE SEALANT, ALL COLORS

SECTION V PHYSICAL DATA

BOILING POINT: Above 300°F

SPECIFIC GRAVITY ( $H_2O = 1$ ): 1.05

MELTING POINT: Not applicable

VAPOR PRESSURE (mmHg): Less than 5mm VAPOR DENSITY (AIR = 1): Not applicable

PERCENT VOLATILE BY VOLUME (%): Less than 5

EVAPORATION RATE: Less than 1 SOLUBILITY IN WATER: <0.1%

MATERIAL IS: \_\_LIQUID \_\_\_SOLID \_\_\_GAS \_X\_PASTE \_\_\_POWDER

ODOR AND APPBARANCE: Colored paste; acetic odor.

SECTION VI REACTIVITY DATA REACTIVITY (NFPA): 1

STABILITY: Stable

CONDITIONS TO AVOID: Air or moisture causes polymerization, forming

Acetic Acid

INCOMPATIBILITY (MATERIALS TO AVOID): Strong oxidizers and caustics

HAZARDOUS DECOMPOSITION PRODUCTS: Normal combustion products, i.e.  $CO_{\kappa}$ ,  $NO_{\kappa}$ 

and Silicone Dioxide.

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: None

SECTION VII SPILL. LEAK AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Use absorbent material or scrape up dried material and place into containers.

WASTE DISPOSAL METHOD: DOW CORNING SUGGESTS THAT ALL LOCAL, STATE AND FEDERAREGULATIONS CONCERNING HEALTH AND POLLUTION BE REVIEWED TO DETERMINE APPROVED DISPOSAL PROCEDURES. CONTACT DOW CORNING IF THERE ARE ANY DISPOSAL QUESTIONS

D.O.T. (49 CFR 171.8)/E.P.A.(40 CFR 117) SPILL REPORTING INFORMATION

HAZARDOUS SUBSTANCE: NONE RQ: NOT APPLICABLE

CONCENTRATION OF HAZARDOUS SUBSTANCE: NOT APPLICABLE

REPORTABLE QUANTITY OF PRODUCT: NOT APPLICABLE

<sup>(</sup>R) INDICATES REGISTERED OR TRADEMARK NAME OF DOW CORNING CORPORATION PAGE 2

# DOW CORNING CORPORATION MATERIAL SAFETY DATA SHEET

NAME OR NUMBER:

SECTION VIII

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Acid vapor type.

VENTILATION:

LOCAL EXHAUST: None should be needed.
SPECIAL: None known to DOW CORNING
MECHANICAL (GENERAL): Recommended
OTHER: None known to DOW CORNING

PROTECTIVE GLOVES: Rubber or plastic recommended.

EYE PROTECTION: Goggles or safety glasses with side shields.

OTHER PROTECTIVE EQUIPMENT: As required by your company.

SECTION IX SPECIAL PRECAUTIONS

HANDLING AND STORING: Keep containers from excessive heat and freezing. Keep

containers tightly closed when not in use.

OTHER PRECAUTIONS: None known to DOW CORNING

THIS DATA IS OFFERED IN GOOD FAITH AS TYPICAL VALUES AND NOT AS A PRODUCT SPECIFICATION. NO WARRANTY, BITHER EXPRESS OR IMPLIED, IS HEREBY MADE. THE RECOMMENDED INDUSTRIAL HYGIENE AND SAFE HANDLING PROCEDURES ARE BELIEVED TO BE GENERALLY APPLICABLE. HOWEVER, EACH USER SHOULD REVIEW THESE RECOMMENDATIONS IN THE SPECIFIC CONTEXT OF THE INTENDED USE AND DETERMINE WHETHER THEY ARE APPROPRIATE.

PREPARED BY: NONE

DATE: JULY 31, 1985

LAST REVISED: SEPTEMBER 30, 1985

(\*) INDICATES REGISTERED OR TRADEMARK NAME OF DOW CORNING CORPORATION PAGE 3

SUBSIDIARY OF KOCH INDUSTRIES, INC., POST OFFICE BOX 2256, WICHITA, KANSAS 67201

I. SUPPLIER'S N	Name Koch Cai	bon, Inc.		Product Trade Nam	e Bituminou	ns Coal
		P.O. Box 2219		Chemical Family	Hydroc	
(City, state	e, zip code)	Wichita, KS 672	01	Formula	N/A	
Emergency Te	Emergency Telephone Number 316-832-5500				fication No.	NA1361
Information	Information Supplied by Tim Durkin					
Date <u>8/2/85</u>	Title	Manager Produc	t Planning & Dis	<u>t.</u>		
II. DESCRIPTION	T					
Includes coa	als between lig	nites and anthra	cites with "fixe	d carbon" <86%, "volat	ile matter" >	14% "calorific value"
>10,500 BTU/	lb (see ASTM I	388 & D3172). P	articulate <75 µ	m (thru No. 200 sieve)	, dispersable	in air, is of primary
interest. (	Coal consists of	of conjugated pol	y (aromatic/unsa	turated/saturated) rigi	nt structures	with hetrocycles
containing,	0, N, and S. (	C <sub>1</sub> 02H <sub>7</sub> 8O <sub>1</sub> 0N <sub>2</sub> has	been suggested a	s a "coal molecule".		
III. HAZARDOUS	INGREDIENTS					
"Proximate Anal	Lysis" of some	air dried bitumi	nous coals:		HAZAB	D DATA
Source	"Moisture"	"Volatiles"	"Fixed Carbon"	"Ash" A	CGIH TLV - 8-	hr TWA 2 mg/m <sup>3</sup> or
West Virginia	1.8	20.4	72.4	5.4	SHA PEL 2.4 m	ng/m <sup>3</sup> . Respirable dust
Pennsylvania	1.2	34.5	58.4	5.9 w	ith <5% quart	z. Respirable dust is
Illinois	8.4	35.0	48.2	8.4 p	articulate <5	iµm in size. Use quartz
Wyoming	11.0	38.6	40.2	10.2   f	ormula (MSDS	#71) if quartz content is
Bituminous coal	ls also contair	trace metals, s	ulfur f(0.4-3.5)	and nitrogen	5%.	•
(0.9-1.5%), dep	pending on sour	ce and type.				
IV. PHYSICAL DA	ATA				f. Vola	tiles at 25 C
a. Boiling	point (*F)	N/A	d. Solubility	in water (%) <u>negligi</u>	ble	negligible
b. Vapor pre	essure (at 25 (	c) negligible	e. Specific g	ravity (H <sub>2</sub> 0=1) <u>1.3-1.6</u>	g. Ev	vap. rate (_N/A = 1)
c. Appearanc	ce & odor Blac	ck powder and sol	id black lump; l	ittle or no odor.		
<del></del>						

c. Flammable limits in air, dust cloud ( in Av.), 5
spark. Lower >0.05\*

a. Ignition temperature (°F) \*\*(layer) >392 F

d. Extinguishing media nitrogen, carbondioxide, steam,

water, ammonium biphosphate powder.

b. Special fire fighting procedures and explosion hazards:

A water spray can be used to cautiously wet down coal to help prevent ignition (avoid raising dust). It is a fire and explosion hazard when exposed to heat or flame.

Firefighters should have self-contained breathing equipment and protective clothing.

\*Ca l oz/ft<sup>3</sup> gives max. flame energy; smallest 20% of particulate determines ignition characteristics; 10-50mJ spark needed at 0-5% moisture, respectively, to initiate combustion in <200 mesh dust. \*\*A pile of 2-7 µm Pittsburgh coal dust heated at 169 C in air can reach AIT in one hour.

#### VI. HEALTH HAZARD DATA

a. Physiological Properties

Coal workers pneumoconiosis (CWP) can occur after years of excessive exposure to respirable coal dust in the mining, handling and processing of coal. Respirable quartz particulate can be simultaneously present with the coal, especially in the mine. In general, coal dust is deposited in the lungs like quartz but requires over 10X as much for adverse effects. It does not kill macrophages; reticulin fibers form, but little collagen is generated. (That which forms is often attributed to quartz.)

The severity of CWP is directly related to the amount of coal dust in the lungs. In many CWP does not progress beyond the simple stage, which is detectable by x-ray as round and irregular "coal macules" of 1-5 mm diameter, but which does not change lung function or shorten life. CWP is a precursor of progressive massive fibrosis (PMF) resulting in large masses of fibrous tissue development (mechanisms unclear). PFM impairs pulmonary function and shortens life. There is no evidence of association of CWP and bronchogenic cancer.

Chronic bronchitis and emphysema are reported to result from excessive coal dust inhalation. Persons having rheumatoid arthritis in conjunction with simple CWP may have rapidly developing lung damage. (Caplan's Syndrome).

#### NATIONAL POISON CENTER NETWORK 1-412-681-6669

#### VI. H. .. TH HAZARD DATA (continued)

- b. Emergency and First Aid Procedures
  - 1. Ingestion Give person large quantities of water and induce vomiting. Obtain services of a physician.
  - 2. Eye Contact Flush eyes liberally with low pressure water for 3 to 5 minutes.
  - 3. Skin Contact Remove contaminated clothing. Wash skin thoroughly with soap and water.
  - 4. Inhalation There are no short term (acute) effects. See V.a. and VIII.a.

#### VII. REACTIVITY DATA

Coal and coal dust is fairly stable at 25 C, but it can react with oxygen from the air, very slowly at room temperature and faster when heated. In piles with good heat retention a slow heat build-up and spontaneous ignition can occur. (Humid air can accelerate this ignition of dry coal.) On heating coal releases combustibles by devolatization and pyrolysis. When these burn, they can heat the solid carbon; hot carbon reacts with 02, CO2, and water vapor to produce combustible gases.

Oxidation products of coal can include oxides of carbon, nitrogen and sulfur, partially oxidized hydrocarbons, soot and fly ash.

This material is incompatible with strong oxidizing agents, especially when heated.

#### CHEMTREC 1-800-424-9300

#### VIII. SPILL OR LEAK PROCEDURES

- a. Steps to be taken for spill or leak Remove ignition sources. Clean-up personnel may need dust respirators and eye protection. Coal dust should be cleaned up in manner that avoids dispersing particulate in air or into the environment. Collect dust in a covered metal container for use as fuel or for disposal.
- b. Waste disposal methods Use as a fuel in a pulverized coal-burning furnace, or burn as slurry in water. For other incineration, possible dust explosions or "puffs" and high temperature need to be considered. Scrap coal dust may be wet down thoroughly with water in a container and buried in landfill. Follow Federal, State and Local regulations.

- a. spiratory protection (Specify type) Use NIOSH at oved respirators for dusts having a permissible en usure limit of 0.05 milligrams (or higher) per cubic meter of air. For example: 3M #9910 Dust/Mist Respirator; MSA Dustfoe 77 Dust/Mist Respirator; Norton Model 7100V Dust/Mist Respirator.
- b. Ventilation (local exhaust, general dilution, special) Provide explosion-proof general and local exhaust ventilation to meet TLV requirements. Approved filtration of exhausted air may be required to prevent excessive environmental dispersion of dust. Where airborne dust is excessive in the workplace, dust respirators and eye protection are needed.

  c. Hand protection Impervious industrial quality gloves recommended.
- d. Eye protection Use goggles recommended by ANSI Z87.1 for use against flying particles.
- e. Other equipment In working with coal dust, use good personal hygiene. Wear regularly cleaned work clothing.

  Showering and changing into street clothing after work may be desirable.

#### X. SPECIAL PRECAUTIONS

- a. Precautionary labeling Flammable solid
- b. Precautions to be taken in handling and storing Follow good housekeeping procedures to control coal dust build up.

  Collect dust from settling areas and surfaces in a manner to avoid generating airborne dust. Design dust suppression measures into processes. Meet explosion-proof code requirements for electrical services where coal dust may be present.
- c. Other precautions Keep sources of heat and ignition, flammable materials, and strong oxidizing agents away from areas where coal dust may collect. Prevent static sparks. Inerting may be desirable, such as powdered CaCO3 or rock dust laid down over coal dust on mine floor or a nitrogen enriched atmosphere in a coal pulverizing machine.

IMPORTANT NOTICE: This information relates only to the specific product or material designated and may not be valid for such product or material used in combination with any other materials or products or any process. The information is, to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty or guarantee is made as to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability and completeness of such information for his own particular use. We do not accept liability for any loss or damage that may occur from the use of this information, nor do we offer any warranty against patent infringement.

#### General Offices/3M

3M Center St. Paul, Minnesota 55144-1000 (612) 733-1110

MATERIAL SAFETY DATA SHEET



DIVISION: TRADE NAME :4

3M I.D. NUMBER! ISSUED: SEPTEMBER 1, 1985 SUPERSEDES: MAY 1, 1981 DOCUMENT: 10-2665-7

1. INGREDIENTS	C.A.S. NO.	PERCENT	EXPOSURE LIMITS	-
magnesium resinate	N/A	0.0	========== N/D	5
zinc oxide	N/A	0.0	N/D	5
phenolic resin	N/A	0.0	N/D	5
2-chloro. 1-3-butadiene polymer	N/A	0.0	N/D	5
TOTAL OF THE ABOVE	N/A	37.3	N/D	5
methyl ethyl ketone	78-93-3	24.3	200 ррн	1
aliphatic petroleum distillate*	8030-30-6	23.7	500 ppm	1
*(contains n-hexane)	110-54-3	7.9	• •	1
toluene	108-88-3	6.9	100 ppm	1

#### SOURCE OF EXPOSURE LIMIT DATA

- 1. ACGIN THRESHOLD LIMIT VALUES
  2. FEDERAL OSHA PERHISSIBLE EXPOSURE LIMIT
- 3. 3M EXPOSURE GUIDELINES
- 4. CHEMICAL MANUFACTURER RECOMMENDED GUIDELINES
  5. NONE ESTABLISHED

#### ABBREVIATIONS

N/D - NOT DETERMINED N/A - NOT APPLICABLE

2. PHYSICAL DATA			
BOILING POINT:	140F - Petro. Dist.	SOLUBILITY IN MATER:	Slight
VAPOR PRESSURE:	968F 120	SP. GRAVITY (MATER=1):	0.88
VAPOR DENSITY (AIR=1):	3.0	PERCENT VOLATILE:	Approx. 63
EVAPORATION RATE		4.5	and the second second
(Ether=1):	>2.5	VISCOSITY:	4-6800 Centistak
APPEARANCE AND ODOR:	Yellow me odor	dium syrup, solvent	pH: N/D

MATERIAL SAFETY DATA SHEET



MSDS: 3M Super Meatherstrip Adhesive PN. 8001 - 8003 - 8004 Page 2 SEPTEMBER 1, 1985

#### 3. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Closed Cup - Petro.): -14F
FLAMMABLE LIMITS - LEL: 1.0 UEL: 11.5

EXTINGUISHING MEDIA:

CO2, foam, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES:

Fire fighters should be equipped with self-contained breathing apparatus when fighting fires involving this material.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Extremely Flammable The vapors released by this product can easily be ignited. Overheated, closed containers adjacent to fire could explode due to pressure buildup.

#### 4. REACTIVITY DATA

INCOMPATIBILITY - MATERIALS TO AVOID:

N/A

HAZARDOUS POLYMERIZATION: MAY NOT OCCUR

HAZARDOUS DECOMPOSITION PRODUCTS:

Thermal decomposition or burning may produce CO, CO2 and chlorinated decomposition products.

#### 5. ENVIRONMENTAL INFORMATION

SPILL RESPONSE:

Observe precautions in all sections. Extinguish all ignition sources. Avoid use of tools which may cause sparking. Collect spilled material. Cleanup residue and place in metal container (U.S. Dept. of Transportation approved if it is to be shipped). Use absorbent material as needed in cleanup procedure.

RECOMMENDED DISPOSAL:

Commercial incineration with destruction and removal efficiency greater than 99.99% or reclamation is preferred. Otherwise, dispose in accordance with local and current U.S. Environmental Protection Agency regulations. DO NOT SEND TO SANITARY LANDFILL. Based on flash point criteria (ignitability), discarded and off-specification product would have an EPA Hazardous Waste Number: DOO1 (Ignitable).

ENVIRONMENTAL DATA:

N/D

**General Offices/3M** 

3M Center St. Paul, Minnesota 55144-1000 (612) 733-1110

MATERIAL SAFETY DATA SHEET



MSDS: SEPTEMBER 1, 1985

Page 4

#### 8. HEALTH HAZARD DATA

EYE CONTACT: Vapor and liquid may cause irritation. Symptoms include smarting, tearing, redness, and swelling.

SKIN CONTACT: May cause irritation. May be absorbed through the skin. Symptoms include dryness and cracking of the skin.

INHALATION: May cause respiratory system irritation. Overexposure may include dizziness, weakness, fatique, nausea, headache, facial numbness, visual disorders, asphxiation, incoordination, decreased reaction time, anemia, and narcosis.

NOTE: Chronic gross overexposure to toluene vapors may cause nervous system, kidney, liver and blood disorders.

NOTE: Prolonged or repeated exposure to n-hexane may cause peripheral nerve damage with loss of touch sensation and muscular weakness.

The information on this Data Sheet represents our current data and best opinion as to the proper use in handling of this product under normal conditions. Any use of the product which is not in conformance with this Data Sheet or which involves using the product in combination with any other product or any other process is the responsibility of the user.

3M Center St. Paul, Minnesota 55144-1000 (612) 733-1110

MATERIAL SAFETY DATA SHEET



MSDS: 3M Super Meatherstrip Adhesive PN. 8001 - 8003 - 8004 SEPTEMBER 1, 1985

age 5

#### 6. SUGGESTED FIRST AID

EYE CONTACT:

Flush immediately with water for at least 10 minutes and call a physician.

SKIN CONTACT:

Wash with soap and water.

INHALATION:

If inhaled, remove to unconteminated air. If not breathing, give artificial respiration. Call a physician.

IF SMALLOMED:

Do not induce vomiting; immediately call a physician.

#### 7. PRECAUTIONARY INFORMATION

Keep away from heat, sparks and flame. Use only in areas adequately ventilated with enough air movement to remove vapors and prevent vapor buildup. The vapors released by this product can be easily ignited. Prevent contact with eyes and skin. Avoid prolonged breathing of vapors. Keep container closed when not in use. Keep out of the reach of children.

NOTE: Utilize personal protection equipment when handling this product, i.e. impervious gloves and chemical goggles or safety glasses. Provide local exhaust ventilation if necessary to keep vapor level below the permissable exposure limits.

# 9-6-85 MATERIAL SAFETY DATA SHEET (ESSENTIALLY SIMILAR TO FORM (ISMA-20)

MANUFACTURE				, , , , , , , , ,				EMERGEN	CY MONE	NUMBER
STANDARDIZED SANITATION SYSTEMS, INC.						(404) 422-2071				
DORESS							(02.7 27.3-2020			
141 Middle	sex Tur	npike,	Burlin	gton, M		1803				
PROPRIETARY						NAME	op Treatmen	and the co		
		<del>,                                     </del>						110		
· · · · · · · · · · · · · · · · · · ·	·		II-HA	ZARDOU	\$ INC	REDIENT	<del>-</del>		1	
		·····					CAS .		Ma. Wij	TLV(ppm
etroleum d	<u>istillat</u>	·	•••		·		8030-	30- <i>6</i>	30	500
Sobutane		•					75-	28-5	12	1000
		<del></del>				<del></del>			1	-
									<del> </del>	ļ
							}		1	
		<del></del>		<del></del>			+		<del></del>	<del> </del>
		<del></del>							<u> </u>	<del></del>
							i		1	1
•	<del></del>								<u> </u>	<u> </u>
				HI-PHYS	ICAL	DATA				
BOILING POINT (*	F;		NA		SP	CIFIC GF AVI	TY (H2O=1)	0.9	10	
VAPOR PRESSURE	(bsië) M	AXIMIM	60		1	OLATICE EY	VOLUME	95		
VAPOR DENSITY		NE		*	EV	APORATION F	AATE (		<b>=</b> 1,	NE
SOLUBILITY IN W	*TER	<b>e</b> mulsi	fiat le		AF	PEARANCE A	ND CDOR whit	e crea	m, pin	е одст
			V-FIRE	& EXPLO	SION	HAZARD	DATA		·	
FLAMMABILITY #	pe: CPSC F	LAME ETTEN	510% TES"		FL	AMMABLETIN	v TS	Lower	Ur	261
COMBUSTIEL		······································						ÑA.	4	Æ
DNIHRIUGNITKE								•		
water foa secoal fine no Self Co	TING PRO	themical CEDURES ⊇d resp				us.		<del></del>		<u>. · · · · · · · · · · · · · · · · · · ·</u>
UNUSUAL FIRE 8	EXPLOSION	HAZARDS		<del></del>						
Do not exp	ose aer	osels to	t engle	ratures	zhov	e 130°i	or the cont	ainer	may ex	. spords
				V-REAC	TIVIT	ATAG Y				
STAR LITY	UNSTA	-B.E		CONSITION EXTREM	ns to a	voic i, spark	us, open fla	stre .	weldi	ng ar
	STABL	.E	Х							
INCOMPATABILI	TV (Materials	16 avoid	1	<u> </u>				<del></del>	<u> </u>	
strong ox						•				
HAZARDOUS DE	I (HVPI 5 TH	Die PF520€7	>							
CO.		~~~			<del></del>					·
		MAN DOCUM	<b>L</b> .	ļ		(ब्रिंग्) त्या १५८ ।	7			
HAZAPDOUS PO YMENGATK	<b>39.</b>			<del></del>	<del></del>					
	-	•		J						

NOTICE JUDGEMENT BASED ON INDIRECT TEST DATA

# MATERIAL SAFETY DATA SHEET

DATE 9-5-85

(ESSENTIALLY SIMILAR TO FORM OSHA-20

839-4777.7731.3

MANUFACTURED 1							EMERGEN	C + PHONI	NUMBER	
	SANITATION	ITATION SYSTEMS, INC. (404) 422-20				22-2071				
DDRESS 141 Middlese						OTHER				
OAMULA	x Idinbike	, Burlin	dron.		01803 ADE NAME		(617) 2	<u>73-202</u>	<u>c</u>	
PROPRIETARY						op Treatme	ent			
		ii-HA'	ZARD		NGREDIENT					
		11-11/04			TONEDIENT			wi;	TEV(ppm	
	<del></del>	<del></del>				CAS .			LVIDDA	
etroleum dist	dllata					9030	-30-6	30	500	
	1:									
Isobutane	<u> </u>					7.5	-28-5	12	1000	
				······································		<del></del>		-{	<u> </u>	
				`						
	,									
		<del></del>						-	<del> </del>	
				<del> </del>		<del></del>		<del>-  </del>	1	
		······································						<u> </u>	<u> </u>	
								1		
<del></del>	<del></del> _	<del></del>							<u> </u>	
			III-P	HYSIC.	AL DATA					
BOILING POINT (*F;		N A			SPECIFIC GEAV	ITY (H2O=1)	0.9	10		
		<del></del>				. <u>"— · · · · · · · · · · · · · · · · · · ·</u>				
VAPOR PRESSURE (DI	PP MAXIMI	M 60			NOL≠TILE BY	VOLUME	95	·		
VAPOR DENSITY	NE.				EVAPORATION	5.1F/		=1.		
	NL	· · · · · · · · · · · · · · · · · · ·			ETA GITA IOTI					
SOLUBILITY IN WATE	a emu	lsifiatle	<u> </u>	ţ	APPEARANCE A	und odor whi	ite crea	m, pir	ie oder	
		IV FIRE	A F-V	DI OS!	ON 1147405	DATA	-	<del>,</del>	<del></del>	
FLAMMABILITY as pe	CEST BLANE EX			PLUSI	PLAMMABLE 1		Lone			
COMMISTIRIE	CAN PERMEET	1542.04 (52			PERSONADED DE	¥ 15	NA .		nder NA	
EXTINGUISHING MEG	) i A				······································					
water, foat,	dry chemic	al carb	or di	<u>loxide</u>						
SECIAL FIRE FIG.	tained re	spirato	ry a	appar	atus.					
UNUSUAL FIRE & EX	PLOTION HAZAFO	) <u>"</u>								
Do not expos	e aerosols	to tempe	ratui	res et	ove 130 i	or the co	ntainer	rusy e	mplode	
			V-R	EACT	ATAG YTIV					
STAP LITY	UNSTABLE		CONT	SHOPE!	TO AVOID		•			
	01101202		EXT	reme l	icai, <b>s</b> par	ks, open f	180%	veldi	ing ar	
	STABLE	X	1							
INTI, BATARYOOM	Materials to avoid							<del></del>		
strong cyic	izerr	_								
MAJARCOUS DEC 1	OF DECEMBER OF	/JC15								
CO					1.0950 7.090	e guaranti samuna antises				
HATAFIDUS	MAYO	Cive	į		1					
PU THE ZATION	<u> </u>				1					
ł	Witt N	FUDDED TO	į	X	NONE					

## **SOHIO CARBORUNDUM**



### MATERIAL SAFETY DATA SHEET

Sohio Emergency Phone (Toll-Free)

In Ohio: 800-362-8059

Outside Ohio: 800-321-8642

CHEMTREC Assist: 800-424-9300

Other Product Safety Info.: 216-575-8024

MANUFACTURER: Sohio Engineered Materials Company - Fibers Division

ADDRESS: P.O. Box 808, Niagara Falls, New York 14302

#### PRODUCT IDENTIFICATION

TRADE NAME: FIBERFRAX<sup>R</sup>

CAS NUMBER: NA

SYNONYM(S): Ceramic Fiber; Refractory Fiber; MMVF CHEMICAL FAMILY: Vitreous Aluminosilicate Fibers

MOLECULAR FORMULA: NA MOLECULAR WEIGHT: NA

SOHIO PRODUCT CODE: NA

HIERARCHY: NA

MSDS NUMBER: AV2

#### PRODUCT HAZARD SUMMARY

HEALTH

WARNING!

MAY BE HARMFUL IF INHALED

MAY BE IRRITATING TO THE SKIN, EYES AND RESPIRATORY TRACT POSSIBLE CANCER HAZARD BASED ON TESTS WITH LABORATORY ANIMALS

FIRE

NON-COMBUSTIBLE

REACTIVITY

STABLE

#### PRODUCT HEALTH HAZARD INFORMATION

ROUTE OF EXPOSURE

EFFECTS OF OVEREXPOSURE

INGESTION:

May cause gastrointestinal disturbances. Symptoms may include irritation, nausea, vomiting and diarrhea.

#### SKIN:

SLIGHTLY TO MODERATELY IRRITATING. May cause irritation and inflammation due to mechanical reaction to sharp, broken ends of fibers.

#### EYE:

SLIGHTLY TO MODERATELY IRRITATING. Abrasive action may cause damage to the outer surface of the eye.

#### INHALATION:

May cause respiratory tract irritation. Pre-existing medical conditions may be aggravated by exposure: specifically, bronchial hyper-reactivity and chronic bronchial or lung disease.

#### SPECIAL TOXIC EFFECTS:

Currently, there are no known chronic health effects in humans from long-term exposure to ceramic fibers.

In animal studies, refractory ceramic fibers injected into the peritoneal (abdominal) cavity have caused acute abdominal hemorrhage in hamsters but not in rats. Such injections have also produced tumors in life-time rat studies. In fact, similar results have been observed with numerous other fibrous materials. In such experiments, this abnormally sensitive injection technique is a non-physiological method of exposure, bypassing both normal pulmonary protective and clearance mechanisms.

Recently published inhalation studies have provided contradictory results. One study, which used rats as the experimental animal, reported lung damage consisting of alveolar proteinosis and interstitial fibrosis, whereas, another study using a different strain of rat, showed no similar effects.

Similarly, the pulmonary tumor-causing potential of refractory ceramic fibers in animals when inhaled is unclear. Two studies suggest a low-order potential in inducing pulmonary tumors in animals, while two other studies suggest ceramic fibers are not tumorigenic in animals.

Further animal and human health studies are planned. Pending the results of these studies, strict adherence to recommended safe work practices described elsewhere in this data sheet is advised.

#### FIRST AID

#### INGESTION:

Do not induce vomiting. Get medical attention if irritation persists.

#### SKIN CONTACT:

Wash area of contact thoroughly with soap and water. Do not rub or scratch exposed skin. Using a skin cream or lotion after washing may be helpful. Get medical attention if irritation persists.

#### EYE CONTACT:

Flush immediately with large amounts of water. Eye hids should be held away from the eyeball to ensure thorough rinsing. Do not rub eyes. Get medical attention if irritation persists.

#### **INHALATION:**

Remove affected person from source of exposure. Get medical attention.

ND = No.Data

NA = Not Applicable

### PERSONAL PROTECTION INFORMATION

The following personal protective guidelines should be followed, especially where engineering controls (e.g. mechanical dust collection and other means of exhaust ventilation) are not technically feasible or do not reduce airborne fiber concentrations to below 2 fibers/cc.

#### EYE PROTECTION:

Wear safety glasses or chemical goggles to prevent eye contact. Do not wear contact lenses when working with this substance. Have eye baths readily available where eye contact can occur.

#### SKIN PROTECTION:

Wear gloves, hats and full body clothing to prevent skin contact. Use separate lockers for work clothes to prevent fiber transfer to street clothes. Avoid taking unwashed work clothes home or provide disposable work clothing. Wash work ciothes separately from other clothing. Rinse washing machine thoroughly after use. If clothing is to be laundered by someone else, inform launderer of proper procedures.

#### RESPIRATORY PROTECTION:

Use NIOSH or MSHA approved equipment when airborne exposure limits are exceeded. NIOSH/MSHA approved breathing equipment may be required for non-routine and emergency use. Ventilation may be used to control or reduce airborne concentrations. Acceptable respirators recommended for airborne ceramic fiber concentrations exceeding 2 fibers/cc are:

Concentration  $2.0 - 5.0 \, f/cc$ 5.0 - 50.0 f/cc

> 50.0 f/cc

Respirator Type

3M 8710 or equivalent.

Survivair full face piece with high efficiency

filter 1090-00 or equivalent.

MSA 01-00-06 full face piece type C supplied-air or

equivalent. OSHA approved air source required.

Pending the results of long-term health effects studies, engineering control of airborne fibers to the lowest levels attainable is advised.

#### PHYSICAL PROPERTIES

BOILING POINT, C (F): NA MELTING POINT, C (F): ND VAPOR PRESSURE, mm Hg: NA

VAPOR DENSITY (AIR=1): NA

SOLUBILITY IN WATER, %: NA

SPECIFIC GRAVITY: ND

% VOLATILE: NA

EVAPORATION RATE (BUTYL ACETATE=1): NA

VISCOSITY, SUS: NA

POUR POINT: NA

pH: NA

APPEARANCE/ODOR: ND

#### FIRE AND EXPLOSION DATA

FLASH POINT, C (F): None

AUTOIGNITION TEMPERATURE, C (F): None

ND = No Data

NA = Not Applicable

FLAMMABILITY LIMITS IN AIR (% BY VOL.): LOWER: NA UPPER: NA

BASIC FIREFIGHTING PROCEDURES: Use extinguishing agent suitable for type of surrounding fire.

UNUSUAL FIRE AND EXPLOSION HAZARDS: NA

#### REACTIVITY DATA

#### STABILITY/INCOMPATIBILITY:

Stable under normal conditions of use. Incompatible with hydrofluoric acid and concentrated alkali.

HAZARDOUS REACTIONS/DECOMPOSITION PRODUCTS:

#### **ENVIRONMENTAL INFORMATION**

#### SPILL OR RELEASE TO THE ENVIRONMENT:

Where possible, use vacuum suction to clean up spilled material. Use dust suppressant where sweeping is necessary. Avoid clean up procedures that may result in water pollution. Personal safety and exposure recommendations described elsewhere in this data sheet apply to exposure during clean up of spilled material.

#### WASTE DISPOSAL:

This substance, when discarded or disposed of, is not specifically listed as a hazardous waste in Federal regulations; however it could be hazardous if it is considered toxic, corrosive, ignitable, or reactive according to Federal definitions (40 CFR 261). Additionally, it could be designated as hazardous according to state regulations. This substance could also become a hazardous waste if it is mixed with or comes in contact with a hazardous waste. If such contact or mixing may have occurred, check 40 CFR 261 to determine whether it is a hazardous waste. If it is a hazardous waste, regulations at 40 CFR 262, 263, and 264 apply.

The transportation, storage, treatment, and disposal of this waste material must be conducted in compliance with all applicable Federal, state, and local regulations.

#### ADDITIONAL ENVIRONMENTAL REGULATORY INFORMATION:

There may be specific regulations at the local, regional or state level that pertain to this material.

#### SPECIAL PRECAUTIONS/SUPPLEMENTAL INFORMATION

#### HANDLING/STORAGE:

Product which has been in service at elevated temperatures (greater than 1600 F) may undergo partial conversion to cristobalite, a form of crystalline silica which can cause severe respiratory disease—"Pneumoconiosis". The amount of cristobalite present will depend on the temperature and length in service.

The permissable exposure limit (PEL) for mineral dusts containing cristobalite is determined by one half the value calculated from the mass formula,  $(10 \text{ mg/M}^3)/(\% \text{ SiO}_2 + 2)$ , i.e. 18% cristobalite;  $1/2(10)/(18+2) = 0.25 \text{ mg/M}^3$  (OSHA 1978). Particular care should be taken when working with "used" material to minimize generation of dust. When

ND = No Data NA = Not Applicable

removing and handling ceramic fiber used in high temperature applications, special caution should be taken to avoid unnecessary cutting and tearing of the used material to minimize generation of airborne dust. Use NIOSH or MSHA approved equipment when airborne exposure limits may be exceeded, especially in confined areas with inadequate ventilation or other areas. Acceptable respirators recommended for given airborne cristobalite concentrations are:

Concentration
Up to 10 times PEL
10 to 100 times PEL

> 100 times PEL

Respirator Type
3M 8710 or equivalent.
Survivair full face piece with high efficiency filter 1090-00 or equivalent.
MSA 01-00-06 full face piece type C supplied-air or equivalent. USHA approved air source required.

#### TRANSPORTATION REQUIREMENTS

D.O.T. HAZARD CLASS (49 CFR 172.101): NA

D.O.T. PROPER SHIPPING NAME (49 CFR 172.101): NA

D.O.T. LABELS REQUIRED (49 CFR 172.101): NA

D.O.T. PLACARDS REQUIRED: NA BILL OF LADING DESCRIPTION: NO

UN/NA CODE: NA

### INGREDIENT/HEALTH HAZARD INFORMATION

COMPONENT	CAS NO.	%	EXPOSURE LIMITS - REFERENCE
Aluminosilicate (vitreous)	NA	99+	2 fibers/cc TWA (SOHIO)*; 10 fibers/cc CL (SOHIO)*
Remaining components not determined hazardous and/or hazardous components present at less than 1.0% (0.1% for carcinogens).	Mixture	Trace	NA
*Pending the results of chronicontrolled at or below the SU			ies, airborne exposures should be re limit listed above.
REVISION DATE: 9/20/85 REPLACES SHEET DATED: 2/15/8	<del></del>	C A	OMPLETED BY: G. R. Krautter PPROVED BY:

NOTICE: The information presented herein is based on data considered to be accurate as of the date of preparation of this Material Safety Data Sheet. However, no warranty or representation, express or implied, is made as to the accuracy or completeness of the foregoing data and safety information, nor is any authorization given or implied to practice any patented invention without a license. In addition, no responsibility can be assumed by vendor for any damage or injury resulting from abnormal use, from any failure to adhere to recommended practices, or from any hazards inherent in the nature of the product.

ND = No Data

NA = Not Applicable

MATERIAL SAFETY DATA SHEET THE BABCOCK & WILCOX COMPANY INSULATING PRODUCTS DIVISION

PAGE 1 OF 2

MSD Identification/Trade Name and Synonyms

(MOTE: Labels on products will show individual product trade names)

KAOWOOL BULK FIBER PRODUCTS: BULK A

> BULK AXE BULK HPA BULK HPAXE BULK 106F ST BULK 2600 BULK CHOPPED FIBER

DEVELOPMENTAL MIX 159F

---- SECTION I

Manufacturer's Name BABCOCK & WILCOX, INSULATING PRODUCTS DIVISION Address (Number, Street, City, State, Zip) P.O. BOX 923, 2102 OLD SAVANNAH ROAD, AUGUSTA, GEORGIA 30903

Chemical Name and Synonyms

N/A MIXTURE Chemical Family

ALUMINOSILICATE

Buergency Telephone Humber (404) 796-4200

Formula.

N/A Comments

N/A

----- SECTION II HAZARDOUS INGREDIENTS --

AS MANUFACTURED REFRACTORY CERAMIC FIBER WT. % 100

2 f/cc\*

\*BABCOCK & WILCOX WORK PLACE EXPOSURE GUIDELINE

#### AFTER HORNAL USE

SEE SECTION IX

----- SECTION III PHYSICAL DATA ------

Boiling Point (F) Specific Gravity Range (H20 = 1) N/A Vapor Pressure (mm Hg.) N/A

Vapor Density (Air = 1) N/A

INSOLUBLE

2.56

Percent Volatile by Volume (%) Evaporation Rate (

N/A N/A

Appearance and Odor

Solubility in Water

WOOL-LIKE FIBROUS MATERIAL. NO ODOR.

----- SECTION IV FIRE AND EXPLOSION HAZARD DATA -----

Extinguishing Media

Flash Point (Method Used)

Flammable Limit

N/A

Special Fire Fighting Procedures LEL

N/A

Unusual Fire and Explosive Hazards

N/A

UEL N/A

DATE PREPARED: 09/24/85 DATE REVISED:

#### MATERIAL SAFETY DATA SHEET THE BABCOCK & WILCOX COMPANY INSULATING PRODUCTS DIVISION

PAGE 2 OF 2

--- SECTION V HEALTH HAZARD DATA ---

Primary Route of Entry

INHALATION, INGESTION AND SKIN IRRITATION

Effects of Overexposure

BASED ON LIMITED TESTING, REFRACTORY CERAMIC FIBERS ARE A SUSPECTED CARCINOGEN IN LABORATORY ANIMALS. CURRENTLY, THERE ARE NO KNOWN CHRONIC HEALTH EFFECTS IN HUMANS FROM LONG-TERM EXPOSURE TO REFRACTORY CERAMIC FIBERS. INSULATION MANUFACTURBRS ASSOCIATION (TIMA) IS SPONSORING ANIMAL INHALATION STUDIES AS WELL AS EPIDEMIOLOGICAL STUDIES OF WORKERS IN THE INDUSTRY. UNTIL DEFINITE ANSWERS BECOME AVAILABLE, STRICT ADHERENCE TO RECOMMENDED SAFE WORK PRACTICES DESCRIBED ELSEWHERE IN THIS MSDS IS ADVISED.

Emergency and First Aid Procedures TERMINATE EXPOSURE

										· ·
		SECTION	٧I	FIRB,	BXPLOSIVE	AND	REACTIVI	TY	DATA	
N/A	4, 43								11	

Recommended Procedure

---- SECTION VII SPILL OR LEAK PROCEDURES ----Waste Disposal Nethod

ROUTINE HOUSEKEEPING

----- SECTION VIII SPECIAL PROTECTION INFORMATION Respiratory Protection (Specify Type)

DUST RESPIRATOR IN COMPLIANCE WITH OSHA STANDARD CURRENTLY 29 CFR 1910.134 (NIOSH APPROVED, AIR PURIFYING, HALF MASK OR FULL FACEPIECE RESPIRATOR WITH APPROPRIATE FILTER PAD OR CARTRIDGE(S))

Ventilation

Local Exhaust

FOLLOW OSHA STANDARD 29 CFR 1910.94 Mechanical (General) FOLLOW OSHA STANDARD 29 CFR 1910.94

Protective Gloves RECOMMENDED

Eye Protection GOGGLES/SAFETY GLASSES RECOMMENDED

Other Protective Equipment

LONG SLEEVE, LOOSE FITTING CLOTHING AND BARRIER CREAM

Material DOES NOT appear on NTP and/or LAC lists of reports for Carcinogens

----- SECTION IX SPECIAL PRECAUTIONS -------

Precautions To Be Taken After Use and Upon Removal THIS PRODUCT AS MANUFACTURED IS AN ALUMINOSILICATE WHICH COULD TRANSFORM UPON HEATING TO MULLITE AND CRISTOBALITE (A FORM OF CRYSTALLINE SILICA). REMOVAL OF THIS PRODUCT AFTER USE MAY RESULT IN THE GENERATION OF DUST. REPEATED INHALA-TION OF RESPIRABLE FREE CRYSTALLINE SILICA DUST MAY CAUSE DELAYED LUNG INJURY (SILICOSIS). THE RECOMMENDED TLV/PEL FOR FREE CRYSTALLINE SILICA IS DERIVED FROM THE FORMULA: 10 mg/cu m

1/2(----)\*

\* Respirable quartz + 2

\*(Reference 1984-85 ACGIH TLV Booklet, Page 34), APPROPRIATE VENTILATION SHOULD BE PROVIDED AND PROTECTIVE EQUIPMENT SHOULD BE WORN IN COMPLIANCE WITH OSHA STANDARD CURRENTLY 29 CFR 1910.134 [NIOSH APPROVED, AIR PURIFYING, HALF MASK OR FULL FACEPIECE RESPIRATOR WITH APPROPRIATE FILTER PAD OR CARTRIDGE(S)].

FOR FURTHER INFORMATION, REFER TO BABCOCK & WILCOX'S PAMPHLET "HEALTH AND SAFETY ASPECTS OF REFRACTORY CERAMIC PIBERS", DATED 05/85.

THE SECTION



PERMATEX INDUSTRIAL A Division of Loctite Corporation P.O. Box 11915 705 N. Mountain Road Newington, CT 06111 (203) 527-5211

## MATERIAL SAFETY DATA SHEET

	PRODUCT IDENTIFICATION						
	Product Name Product Type	·				,-12, 81247 D, 81247	
Ι.	COMPOSITION						
	Ingredients	% by Wt	<u>•</u>		<u>Hazard</u>		•
	Isopropyl Alcohol Modified Natural Resins Clay (Kaolin) **	~12 ~33 ~55		LV - 40	00 ppm*		
	*Overexposure to isopropyl alcohol Liquid isopropyl alcohol is an eye **Clay (Kaolin) has been shown to doses to experimental animals. It of this product poses no such haza	e irritan cause re : is our	t and mo producti	derate ve eff	ly toxic ects when	by ingesti fed in hi	on. gh
III.	CHEMICAL AND PHYSICAL PROPERTIES						
	Vapor Pressure ~33 mm Vapor Density ~2 Solubility in Water Partial Appearance Black paste		Boiling	Point oes no	t apply	F	
IV.	TOXICITY AND HEALTH HAZARD						
	Toxicity Moderate by ingestion. Eye irritan	nt.	TLV I	soprop	yl Alcoho	1 = 400 pp	m TWA
	Symptoms of Overexposure <u>Vapor above</u> can cause headache, dizziness, naus	ve TLV is sea.	irritat	ing to	eyes, no	se and thr	oat and
	Emergency Treatment Procedures Ingestion: Induce vomiting and o	get medic	al atten	tion.			
	Inhalation: Remove to fresh air.				<u></u>		
	Skin Contact: <u>Wash with soap and wa</u> Eye Contact: <u>Flush with water and</u>	consult	a physic	ian.			
	Personal Protection Eyes: Safety glasses recomm	mended.					
	Skin: Protective gloves re	commended	i.				
	Ventilation: Must be adequate to	avoid exc	ceeding 1	LV.			

FLAMMABILITY AND EXPLOSIVE PROPERTIES
Flash point ~55°F Method Closed Cup Explosive Limits (% by volume in air) Lower 2 % Upper 12 % Recommended Extinguishing Agents CO2, Dry Chemical, Foam Hazardous Products Formed by Fire or Thermal Decomposition: Irritating organic vapors. Unusual Fire or Explosion Hazards: Compressed Gasses Name Pressure at Room Temperature
REACTIVITY DATA
Stability [X] Stable [ ] Unstable Hazardous Polymerization [ ] May Occur [X] Will Not Occur Hazardous Decomposition Products (non-thermal) Does not apply
Incompatibility Strong oxidizers.
SPILL OR LEAK AND DISPOSAL PROCEDURES
Steps to be taken in case of spill or leak: Scrape up as much as possible and store in a closed container until disposal. Residues may be cleaned with isopropyl alcoho
Recommended methods of disposal: <u>Landfill or incinerate following EPA and local</u> regulations.
STORAGE AND HANDLING PROCEDURES
Storage: Store away from heat and flame. Handling: Avoid prolonged breathing of vapors. Keep away from eyes.
SHIPPING REGULATIONS
Type or Class DOT ORM-D
IATA Class 3 - Packaging Group II Proper Shipping Name DOT Consumer Commodity
IATA Resin Solution, flammable UN #1866

Prepared By: Martin Hauser

Title: Vice President - Environmental Health & Safety

Date: October 1, 1985

#### General Offices/3M

3M Center St. Paul, Minnesota 55144-1000 (612) 733-1110

MATERIAL SAFETY DATA SHEET



DIVISION: ADMESIVES, COATINGS AND SEALERS TRADE NAME: FASTBOND(R) Contact Adhesive 10

Noutrel/Brushable

3M I.D. NUMBER: ISSUED: NOVEMBER 2, 1985 SUPERSEDES: OCTOBER 1, 1985 DOCUMENT: 10-2685-5

1. INGREDIENTS	C.A.S. NO.	PERCENT	EXPOSURE LIMITS	۲,
- 中国中央企業企業 - 中国 - 中	医医生性性 化二甲基甲基甲基甲基甲基	B # 2 2 2 2 2 2 2 2 2 5 5 5 5	四世 片 二 5 名 2 3 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	******
polychioroprene rubber	N/A	0.0	N/D	5
magnesium resinate	N/A	0.0	N/D	£
filler	N/A	0.0	N/O	5
TOTAL OF THE ABOVE	N/A	23.0		5
aliphatic petroleum distillates*		29.0	500 ppm	2
*contains n-hexana	110-54-3	10.0	50 ppm	1
acetone	67-64-1		750 ppm	
toluene	108-88-3		100 pos	ī

- SOURCE OF EXPOSURE LIMIT DATA

  1. ACGIH THRESHOLD LIMIT VALUES

  2. FEDERAL OSHA PERMISSIBLE EXPOSURE LIMIT
- 3M EXPOSURE GUIDELINES
- CHEMICAL MANUFACTURER RECOMMENDED GUIDELINES
- 5. NONE ESTABLISHED

#### **ABBREVIATIONS**

N/D - NOT DETERMINED N/A - NOT APPLICABLE

BOILING POINT:	132F {acatone}	SOLUBILITY IN MATER:	Very ≡light
VAPOR PRESSURE:	D68F 180	SP. GRAVITY (WATER#1):	0.83
	mm		
/APOR DENSITY (AIR=1):	3.0	PERCENT VOLATILE:	Approx. 78
VAPORATION RATE			• T
(Ether=1):	2+	VISCOSITY:	965
			Centietok
		•	94
APPEARANCE AND OGOR:	Yellow - e	olvent odor	pH: N/D

. General Offices/3M

3M Center St. Paul, Minnesota 55144-1000 (612) 733-1110

MATERIAL SAFETY DATA SHEET



MSDS: FASTBOND(R) Contact Adhesive 10 Neutral/Brushable Page 2 NOVEMBER 2, 1985 3. FIRE AND EXPLOSION HAZARD DATA **电影电影发展电影电影电影电影发展或影响电影电影电影影响影响电影** FLASH POINT (Closed Cup): -14F FLAMMABLE LIMITS - LEL; 1.0 UEL; 12.8 EXTINGUISHING MEDIA: COZ, foam, dry chemical SPECIAL FIRE FIGHTING PROCEDURES: Fire fighters should be equipped with self-contained breathing apparatus when fighting fires involving this material. UNUSUAL FIRE AND EXPLOSION HAZARDS: Extremely Flammable. Overheated, closed containers adjacent to fire could explode due to pressure buildup. 4. REACTIVITY DATA STABILITY: STABLE INCOMPATIBILITY - MATERIALS TO AVOID: Oxidizers HAZARDOUS POLYMERIZATION: MAY NOT OCCUR HAZARDOUS DECOMPOSITION PRODUCTS: CO, CO2, HC1 and smoke particles when subjected to excessive heat or flame. 5. ENVIRONMENTAL INFORMATION SPILL RESPONSE: Collect spilled material observing all precautions in section 7. Place in a closed metal container for disposal or salvage. RECOMMENDED DISPOSAL: Commorcial incineration with destruction and removal afficiency greater than 99.99% or reclamation is preferred. If incinerated, more than 99% of the hydrogen chloride in exhaust gas should be removed. Otherwise, dispose in accordance with local and current U.S. Environmental Protection Agency regulations. U.S. EPA Hazardous Maste Number: D001 (Ignitable). ENVIRONMENTAL DATA: N/Ø

General Offices/3M

3M Center St. Paul, Minnesota 55144-1000 (612) 733-1110

MATERIAL SAFETY DATA SHEET



MSDS: FASTBOND(R) Contact Adhesive 10 Neutral/Brushable NOVEMBER 2, 1985

Page 3

#### 6. SUGGESTED FIRST AID

EYE CONTACT:

Flush eyes immediately with planty of water for at least 10 minutes. Call a physician.

SKIN CONTACT:

Wash area with soap and water.

INHALATION:

Move affected person to fresh eir at once. Restore or support breathing as necessary. If breathing difficulties persist, call a physician.

IF SWALLOWED:

Do not induce vomiting. Aspiration into the lung may be harmful. Contact = physician immediately.

#### 7, PRECAUTIONARY INFORMATION

넊늗늗quassace au Sfatseseseseseseseseseses Keep away from heat, sparks and flame. Use only in areas adequately ventilated with enough air movement to remove vapors and prevent vapor buildup. The vapors released by this product can be easily ignited. Avoid centect with eyes and skin. Avoid prolonged breathing of vapors. Keep container closed when not in use. Keep out of the reach of children. NOTE: Utilize personal protection equipment when handling this product, i.e. impervious gloves and chemical gapgles. If product is to be aprayed, use a functioning apray booth or sufficient local exhaust ventilation to prevent vapor buildup.

#### General Offices/3M

St. Paul, Minnesota 55144-1000 (612) 733-1110

MATERIAL SAFETY DATA SHEET



MSDS: FASTBOND(R) Contact Adhesive 10 Neutral/Brushable JUNE 30, 1987

#### 6. HEALTH HAZARD DATA

EYE CONTACT: Liquid Liquid causes eye irritation. Vapore may cause eye irritation. Symptoms may include tearing, radness and blurred vision.

SKIN CONTACT: May cause skin irritation. n-Hexane may be absorbed through the skin in harmful amounts.

INHALATION: Vapors may cause respiratory system irritation and nervous system impairment. Symptoms of acute overexposure may include hoadache, fatigue, droweiness, irritability, dizziness, incoordination, nauses, vomiting, facial numbness, visual disorders and, in the extreme cases, unconsciousness and asphyxiation. Repeated or extreme overexposure to toluene vapors or n-haxana may cause nervous system damage.

INGESTION: Swallowing may cause gestrointestinal irritation, nauses, diarrhes and nervous system impairment. Aspiration into the lung as a result of vomiting may cause lung damage.

The information on this Data Sheet represents our ourrent data and bast opinion as to the proper use in handling of this product under normal conditions. Any use of the product which is not in conformance with this Data Sheet or which involves using the product in combination with any other product or any other process is the responsibility of the user.



Steinfeld's Products Company 10001 N. Rivergate Boulevard Portland, Oregon 97203 (503) 286-8241, FAX (503) 289-6854

FAX TO:		DATE:	1/22/93	
ATTN: Howard	Mathe San			
FROM: Mary I	selong			
NUMBER OF PAGES I	NCLUDING COVE	RSHEET:	3	
MESSAGE: Per	your request	msos	for vin	odol
	0			J

PICKLES, RELISH, SAUERKRAUT, PEPPERS, & MUSTARD



# MATERIAL SAFETY DATA SHEET

#### FLEISCHMANN'S VINEGAR

Date Issued:

🏗 10 - 1 - 85

Trade Name:

Vinegar, all varieties

Chemical Name:

Acetic Acid

Chemical Formula:

CH,COOH

Definition:

Product made by the acetous fermentation of ethyl alcohol containing 8 to 30%

acetic acid (or 80 to 300 grain vinegar).

Manufacturer's Name and Address: NABISCO BRANDS, INC.

\*NABISCO BRANDS, INC. T EAST HANOVER, N.J. 07936

(301) 466-8300

Phone Number:

(415) 633-2200

#### **HEALTH HAZARD DATA**

Inhalation:

Threshold Limit Value:

10 ppm

Short Term Exposure Limit:

15 ppm for 15 minutes

Odor Threshold:

1.0 ppm

Inhalation of vapors can cause irritation to respiratory tract.

Skin:

Contact may cause mild injury and burns from vinegars of 10% acetic acid and greater.

Dilute solutions may cause dermatitis in some sensitive individuals.

Eyes:

May cause severe burns and permanent corneal injury from concentrated vinegars. May be

followed by blindness. High vapor concentrations may result in conjunctivitis.

Ingestion:

Concentrated vinegars may cause pain, irritation and burns in mouth, gullet and stomach.

#### **EMERGENCY & FIRST-AID PROCEDURES**

In case of eye or skin contact, flush immediately and thoroughly with water.

Saturated clothing should be removed and washed,

If vapors are inhaled extensively, exposed person should be removed to fresh air immediately.

If swallowed, water should be consumed to dilute.

Do not induce voniting.

Do not give emetics or baking soda.

Call a physician.

#### FIRE AND EXPLOSION HAZARD DATA

Flash Point:

40°C closed cup

(Acetic Acid)

Auto Ignition Temperature:

427°C

(Acetic Acid) 4.0% - 16%

Flammable Limits in Air:

(Acetic Acid)

Fire Extinguishing Agents Recommended:

Water spray, foam CO2 or dry chemical. Water may be used to dilute spills and reduce

flammability.

Unusual fire and explosion hazards:

Toxic gases and vapors may be released in a fire involving concentrated vinegars.



# MATERIAL SAFETY DATA SHEET

#### FLEISCHMANN'S VINEGAR

#### REACTIVITY DATA

Stability

[X] Stable

[ ] Unstable

Hazard Polymerization

[X] Will not occur

[ ]May occur

Incompatibility:

Contact with strong oxidizers may cause fires and will react with strong caustics to cause violent spattering and heat.

Hazardous decompositon products:

May produce carbon monoxide (CO) and/or carbon dioxide (CO<sub>2</sub>).

#### SPILL OR LEAK PROCEDURES

If vinegar is spilled, dike to contain, ventilate area, dilute with water: may be neutralized with addition of soda ash.

Do not flush to streams or sewers.

#### Waste Disposal Methods

Treatment or disposal of waste generated by use of vinegar should be reviewed in terms of applicable federal, state and local laws and regulations. Users are advised to consult with appropriate regulatory agencies before discharge, treatment or disposal.

#### SPECIAL PROTECTION INFORMATION

#### Respiratory Protection

As required to prevent exposure to concentrations which exceed the permissible level.

Ventilation

Local exhaust recommended.

Mechanical recommended.

Eyes and Face

Safety glasses or plastic face shield required.

Hands, Arms, Body

Rubber or neoprene gloves recommended.

Rubber apron or other protective equipment as required to reduce direct contact.

Other Equipment

Eye wash station, safety shower.

#### PHYSICAL DATA

Appearance and Odor

type of vinegar

Appropriate color and odor for

ior

pH 2.2 @ 100 grain

**Boiling Point** 

244°F

Vapor Pressure (MM Hg)

11 MM

Vapor Density (Air=1)

2.1

Solubility in Water

Complete

Specific Gravity

1.01

% Volatiles by Volume 100%

glanger gegene

MSDS GROUP: 1.1

MATERIAL SAPETY DATA SHEET THE BABCOCK & WILCOX COMPANY INSULATING PRODUCTS DIVISION

PAGE 1 OF 2

MSD Identification/Trade Name and Synonyme

(NOTE: Labels on products will show individual product trade names)

KAOWOOL BLANKET PRODUCTS:

STANDARD BLANKET (NF OR NON-NF)

HP BLANKET HP BLANKET B BLANKET B 2600 BLANKET ST BLANKET ACE BLANKET

KAOWOOL ULTRAFELT PRODUCTS: ULTRAFELT BLANKET ULTRAFELT PAPER

MISC. KAOWOOL BLANKET PRODUCTS:

ST BATTS

DIE-CUT SHAPES

FOIL-BACKED BLANKET

WET FELT

430 SS MESH ENCLOSED SHAPES

WELD INSULATION KIT (WIK)

TANK CAR INSULATION

STRIP

---- SECTION I --

Nanufacturer's Wame

BABCOCK & WILCOX, INSULATING PRODUCTS DIVISION Address (Number, Street, City, State, Zip)

P.O. BOX 923, 2102 OLD SAVANNAH ROAD, AUGUSTA, GEORGIA 30903

Chemical Name and Synonyms

N/A MIXTURE

Chemical Family

ALUMINOSILICATE

Energency Telephone Number

(404) 796-4200

**Formula** 

N/A Comments

N/A

----- SECTION II HAZARDOUS INGREDIENTS --

A. AS MANUFACTURED

REFRACTORY CERAMIC FIBER

WT. 3

TVL/PEL

100

\*BABCOCK & WILCOX WORK PLACE EXPOSURE GUIDELINE

#### AFTER MORMAL USE

SEE SECTION IX

----- SECTION III PHYSICAL DATA ------

Boiling Point (F) N/A Vapor Pressure (mm Hg.)

N/A

Specific Gravity Range (H2O = 1) 2.56

Vapor Density (Air = 1) N/ASolubility in Water

INSOLUBLE

Percent Volatile by Volume (%)

Evaporation Rate ( - 1)

N/A N/A

Appearance and Odor

WOOL-LIKE FIBROUS MATERIAL. NO ODOR.

----- SECTION IV FIRE AND EXPLOSION HAZARD DATA -----

Flash Point (Method Used) Extinguishing Media

Planmable Limit

N/A Special Fire Fighting Procedures LEL Unusual Fire and Explosive Hazards

N/A

N/A

DATE PREPARED: 10/01/85 DATE REVISED:

NATERIAL SAFETY DATA SHEET THE BABCOCK & WILCOX COMPANY INSULATING PRODUCTS DIVISION

PAGE 2 OF 2

MSDS GROUP: 11

- SECTION V HEALTH HAZARD DATA ----

Primary Route of Entry

INHALATION, INGESTION AND SKIN IRRITATION

Bffects of Overexposure

BASED ON LIMITED TESTING WITH LABORATORY ANIMALS, REPRACTORY CERAMIC FIBERS ARE A SUSPECTED CARCINGEN IN LABORATORY ANIMALS. CURRENTLY, THERE ARE NO KNOWN CHRONIC HEALTH EFFECTS IN HUMANS FROM LONG-TERM EXPOSURE TO REFRACTORY CERAMIC FIBERS. THE THERMAL INSULATION MANUFACTURERS ASSOCIATION (TIMA) IS SPONSORING ANIMAL INHALATION STUDIES AS WELL AS EPIDEMIOLOGICAL STUDIES OF WORKERS IN THE INDUSTRY. UNTIL DEFINITE ANSWERS BECOME AVAILABLE, STRICT ADHERENCE TO RECOM-MENDED SAFE WORK PRACTICES DESCRIBED ELSEWHERE IN THIS MSDS IS ADVISED.

Emergency and First Aid Procedures TERMINATE EXPOSURE

----- SECTION VI FIRE, EXPLOSIVE AND REACTIVITY DATA -----

----- SECTION VII SPILL OR LEAK PROCEDURES -----

Recommended Procedure

Waste Disposal Nethod

ROUTINE HOUSEKEEPING

----- SECTION VIII SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type)

DUST RESPIRATOR IN COMPLIANCE WITH OSHA STANDARD CURRENTLY 29 CFR 1910.134 (NIGSH APPROVED, AIR PURIFYING, HALF MASK OR FULL FACEPIECE RESPIRATOR WITH APPROPRIATE FILTER PAD OR CARTRIDGE(S))

Ventilation

Local Exhaust Mechanical (General)

FOLLOW OSHA STANDARD 29 CFR 1910.94 FOLLOW OSHA STANDARD 29 CFR 1910.94

Protective Gloves RECOMMENDED

**Bye Protection** GOGGLES/SAFETY GLASSES RECOMMENDED

Other Protective Equipment

LONG SLEEVE, LOOSE FITTING CLOTHING AND BARRIER CREAM Naterial DOES NOT appear on NTP and/or LAC lists of reports for Carcinagens

----- SECTION IX SPECIAL PRECAUTIONS

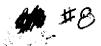
Precautions To Be Taken After Use and Upon Removal THIS PRODUCT AS MANUFACTURED IS AN ALUMINOSILICATE WHICH COULD TRANSFORM UPON HEATING TO MULLITE AND CRISTOBALITE (A FORM OF CRYSTALLINE SILICA). REMOVAL OF THIS PRODUCT AFTER USE MAY RESULT IN THE GENERATION OF DUST. REPEATED INHALA-TION OF RESPIRABLE FREE CRYSTALLINE SILICA DUST MAY CAUSE DELAYED LUNG INJURY (SILICOSIS). THE RECOMMENDED TLV/PEL FOR FREE CRYSTALLINE SILICA IS DERIVED. FROM THE FORMULA: 10 mg/cu m

\* Respirable quartz + 2

o condigio e con combinato har di calminintalia della contralizza di concentralizza di concentralizza di conse

\*(Reference 1984-85 ACGIH TLV Booklet, Page 34) APPROPRIATE VENTILATION SHOULD BE PROVIDED AND PROTECTIVE EQUIPMENT SHOULD BE WORN IN COMPLIANCE WITH OSHA STANDARD CURRENTLY 29 CFR 1910.134 [NIOSH APPROVED, AIR PURIFYING, HALF MASK OR FULL PACEPIECE RESPIRATOR WITH APPROPRIATE FIGTER PAD OR CARTRIDGE(S)].

FOR FURTHER INFORMATION, REFER TO BABCOCK & WILCOX'S PAMPHLET "HEALTH AND "SAFETY ASPECTS OF REFRACTORY CERAMIC FIBERS", DATED 05/85.



MATERIAL SAFETY DATA SHEET THE BABCOCK & WILCOX COMPANY INSULATING PRODUCTS DIVISION

PAGE 1 OF 2

MSD Identification/Trade Name and Synonyms

(NOTE: Labels on products will show individual product trade names)

KAOWOOL STX PRODUCTS:

STX BLANKET STX MODULES

UNIFELT IT MODULES

PYRO-BLOC FIBER PRODUCTS:

PYRO-BLANKET C

PYRO-BLOC PACKING C

PYRO-BLOC MODULE PRODUCTS:

"Y" MODULE C T-BAR MODULE C

----- SECTION I

Manufacturer's Name BABCOCK & WILCOX, INSULATING PRODUCTS DIVISION Address (Number, Street, City, State, Zip) P.O. BOX 923, 2102 OLD SAVANNAH ROAD, AUGUSTA, GEORGIA 30903

Chemical Name and Synonyas

N/A MIXTURE

Chemical Pamily

CHROME ALUMINOSILICATE

Emergency Telephone Mumber (404) 796-4200

Formula

N/A Consents

N/A

----- SECTION II HAZARDOUS INGREDIENTS

AS MANUFACTURED REFRACTORY CERAMIC FIBER WT. S

TVL/PBL \*2 1/cc

\*BABCOCK & WILCOX WORK PLACE EXPOSURE GUIDELINE

## AFTER NORMAL USE

SEE SECTION IX

----- SECTION III PHYSICAL DATA -----

Boiling Point (F) N/A Specific Gravity Range (H2O = 1) 2.56

Vapor Pressure (mm Hg.) N/A

N/A Vapor Density (Air = 1) N/APercent Volatile by Volume (\*) N/A INSOLUBLE Solubility in Water Evaporation Rate (

Appearance and Odor

WOOL-LIKE FIBROUS MATERIAL. NO ODOR.

Extinguishing Media

N/A

Flash Point (Method Used) Flammable Limit N/A

Unusual Fire and Explosive Hazards Special Fire Fighting Procedures LEL UEL

DATE PREPARED: 10/01/85 DATE REVISED:

# MATERIAL SAPETY DATA SHEET THE BABCOCK & WILCOX COMPANY INSULATING PRODUCTS DIVISION

PAGE 2 OF 2

----- SECTION V HEALTH HAZARD DATA --

Primary Route of Entry

INHALATION, INGESTION AND SKIN IRRITATION

Effects of Overexposure

BASED ON LIMITED TESTING WITH LABORATORY ANIMALS, REFRACTORY CERAMIC FIBERS ARE A SUSPECTED CARCINOGEN IN LABORATORY ANIMALS. CURRENTLY, THERE ARE NO KNOWN CHRONIC HEALTH EFFECTS IN HUMANS FROM LONG-TERM EXPOSURE TO REFRACTORY CERAMIC FIBERS. THE THERMAL INSULATION MANUFACTURERS ASSOCIATION (TIMA) IS SPONSORING ANIMAL INHALATION STUDIES AS WELL AS EPIDEMIOLOGICAL STUDIES OF WORKERS IN THE INDUSTRY. UNTIL DEFINITE ANSWERS BECOME AVAILABLE, STRICT ADHERENCE TO RECOMMENDED SAFE WORK PRACTICES DESCRIBED ELSEWHERE IN THIS MSDS IS ADVISED.

Emergency and First Aid Procedures
TERMINATE EXPOSURE

----- SECTION VI FIRE, EXPLOSIVE AND REACTIVITY DATA -----

N/A

----- SECTION VII SPILL OR LEAK PROCEDURES

Recommended Procedure

Waste Disposal Method

/A ROUTINE HOUSEKEEPING

----- SECTION VIII SPECIAL PROTECTION INFORMATION -----

Respiratory Protection (Specify Type)

DUST RESPIRATOR IN COMPLIANCE WITH OSHA STANDARD CURRENTLY 29 CFR 1910.134

(NIOSH APPROVED. AIR PURIFYING. HALF MASK OR FULL FACEPIECE RESPIRATOR WITH

(NIOSH APPROVED, AIR PURIFYING, HALF MASK OR FULL FACEPIECE RESPIRATOR WITH APPROPRIATE FILTER PAD OR CARTRIDGE(S))

Ventilation

Local Exhaust Mechanical (General)

FOLLOW OSHA STANDARD 29 CFR 1910.94 FOLLOW OSHA STANDARD 29 CFR 1910.94

Protective Gloves
RECOMMENDED

**'es** 

Bye Protection GOGGLES/SAFETY GLASSES RECOMMENDED

Other Protective Equipment

LONG SLEEVE, LOOSE FITTING CLOTHING AND BARRIER CREAM.

Material DOES NOT appear on NTP and/or LAC lists of reports for Carcinogens

Precautions To Be Taken After Use and Upon Removal
THIS PRODUCT AS MANUFACTURED IS A CHROME (III) ALUMINOSILICATE WHICH COULD
TRANSFORM UPON HEATING TO MULLITE, CRISTOBALITE (A FORM OF CRYSTALLINE SILICA)
A CHROME COMPOUNDS. REMOVAL OF THIS PRODUCT AFTER USE MAY RESULT IN THE GENERATION OF DUST. REPEATED INHALATION OF RESPIRABLE FREE CRYSTALLINE SILICA MAY
CAUSE DELAYED LUNG INJURY (SILICOSIS). THE RECOMMENDED TLV/PEL FOR FREE
CRYSTALLINE SILICA IS DERIVED FROM THE FORMULA:

10 mg/cu m

1/2(----)\*

% Respirable Quartz + 2

\*(Reference 1984-85 ACGIH TLV Booklet, Page 34). CHROMIUM (VI), CERTAIN WATER INSOLUBLE COMPOUNDS, IS LISTED IN 1984-85 ACGIH TLV BOOKLET AS A CARCINOGEN IN HUMANS. THE RECOMMENDED TLV/PEL FOR CHROMIUM (VI) IS 0.05 mg Cr/cu m (Reference 1984-85 ACGIH TLV BOOKlet, Page 14). APPROPRIATE VENTILATION SHOULD BE PROVIDED AND PROTECTIVE EQUIPMENT SHOULD BE WORN IN COMPLIANCE WITH OSHA STANDARD CURRENTLY 29 CFR 1910.134 [NIOSH APPROVED, AIR PURIFYING, HALF MASK OR FULL FACEPIECE RESPIRATOR WITH APPROPRIATE FILTER PAD OR CARTRIDGE(S)].

FOR FURTHER INFORMATION, REFER TO BABCOCK & WILCOX'S PAMPHLET "HEALTH AND SAFETY ASPECTS OF REFRACTORY CERAMIC FIBERS" DATED 05/85.

NATERIAL SAFETY DATA SHEET THE BABCOCK & WILCOX COMPANY INSULATING PRODUCTS DIVISION

PAGE 1 OF 2

MSD Identification/Trade Name and Synonyms

Labels on products will show individual product trade names)

KAOWOOL BOARD PRODUCTS:

14C BOARD 15C BOARD 17C BOARD 2600 BOARD 3000 BOARD

KAOWOOL UNIFELT PRODUCTS:

UNIFELT 3000 MODULES

UNIFELT 3000 (HT) MODULES

UNIFELT XT MODULES UNIFELT 14C MODULES UNIFELT 15C MODULES UNIFELT 17C MODULES

KAOWOOL SLEEVE PRODUCTS:

2600 SLEEVES

3000 SLEEVES

KAOWOOL 3000 BURNER BLOCKS

---- SECTION I

Manufacturer's Name

Emergency Telephone Number

BABCOCK & WILCOX, INSULATING PRODUCTS DIVISION

(404) 796-4200

Address (Number, Street, City, State, Zip)

P.O. BOX 923, 2102 OLD SAVANNAH ROAD, AUGUSTA, GEORGIA 30903

Chemical Name and Synonyas

Formula

N/A MIXTURE Chemical Family N/A

ALUMINOSILI.CATE

Comments N/A

---- SECTION II HAZARDOUS INGREDIENTS ---

A. AS MANUFACTURED

TVL/PEL NT. X

REPRACTORY CERAMIC FIBER

100 2 f/cc\*

\*BABCOCK & WILCOX WORK PLACE EXPOSURE GUIDELINE

#### AFTER NORMAL USE

SEE SECTION IX

--- SECTION III PHYSICAL DATA -----

Boiling Point (F)

N/AN/A Specific Gravity Range (H20 = 1)

Vapor Pressure (mm Hg.) Vapor Density (Air = 1)

N/A

0.2 - 1.2Percent Volatile by Volume (%)

N/A

Solubility in Water

INSOLUBLE

Evaporation Rate (

N/A

Appearance and Odor

FIBER SHAPE NO ODOR.

----- SECTION IV FIRE AND EXPLOSION HAZARD DATA -----

Extinguishing Media

N/A

Flash Point (Method Used)

N/A

Flammable Limit

N/A

N/A

Unusual Fire and Explosive Hazards Special Fire Fighting Procedures

LEL UEL

DATE PREPARED: 10/01/85 DATE REVISED:

# MATERIAL SAFETY DATA SHEET THE BABCOCK & WILCOX COMPANY INSULATING PRODUCTS DIVISION

PAGE 2 OF 2

-- SECTION V HEALTH HAZARD DATA --

Primary Route of Entry

INHALATION, INGESTION AND SKIN IRRITATION

Effects of Overexposure

BASED ON LIMITED TESTING, REFRACTORY CERAMIC FIBERS ARE A SUSPECTED CARCINOGEN IN LABORATORY ANIMALS. CURRENTLY, THERE ARE NO KNOWN CHRONIC HEALTH EFFECTS IN HUMANS FROM LONG-TERM EXPOSURE TO REFRACTORY CERAMIC FIBERS. THE THERMAL INSULATION MANUFACTURERS ASSOCIATION (TIMA) IS SPONSORING ANIMAL INHALATION STUDIES AS WELL AS EPIDEMIOLOGICAL STUDIES OF WORKERS IN THE INDUSTRY. UNTIL DEFINITE ANSWERS BECOME AVAILABLE, STRICT ADHERENCE TO RECOMMENDED SAFE WORK PRACTICES DESCRIBED ELSEWHERE IN THIS MSDS IS ADVISED. THIS PRODUCT CONTAINS MINOR AMOUNTS OF BINDERS WHICH BURN OUT DURING FIRST HEAT UP.

Emergency and First Aid Procedures
TERMINATE EXPOSURE

Recommended Procedure Waste Disposal Nethod

N/A .

ROUTINE HOUSEKEEPING

----- SECTION VIII SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type)

DUST RESPIRATOR IN COMPLIANCE WITH OSHA STANDARD CURRENTLY 29 CFR 1910.134 (NIOSH APPROVED, AIR PURIFYING, HALF MASK OR FULL FACEPIECE RESPIRATOR WITH APPROPRIATE FILTER PAD OR CARTRIDGE(S))

Ventilation

Local Exhaust Mechanical (General) FOLLOW OSHA STANDARD 29 CFR 1910.94 FOLLOW OSHA STANDARD 29 CFR 1910.94

Protective Gloves
RECOMMENDED

Bye Protection
GOGGLES/SAFETY GLASSES RECOMMENDED

Other Protective Equipment

LONG SLEEVE. LOOSE FITTING CLOTHING AND BARRIER CREAM

Material DOES NOT appear on NTP and/or LAC lists of reports for Carcinogens

----- SECTION IX SPECIAL PRECAUTIONS -----

Precautions To Be Taken After Use and Upon Removal
THIS PRODUCT AS MANUFACTURED IS AN ALUMINOSILICATE WHICH COULD TRANSFORM UPON
HEATING TO MULLITE AND CRISTOBALITE (A FORM OF CRYSTALLINE SILICA). REMOVAL OF
THIS PRODUCT AFTER USE MAY RESULT IN THE GENERATION OF DUST. REPEATED INHALATION OF RESPIRABLE FREE CRYSTALLINE SILICA DUST MAY CAUSE DELAYED LUNG INJURY
(SILICOSIS). THE RECOMMENDED TLV/PEL FOR FREE CRYSTALLINE SILICA IS DERIVED
FROM THE FORMULA:

10 mg/cu m

1/2(----)\*

\* Respirable quartz + 2

\*(Reference 1984-85 ACGIH TLV Booklet, Page 34). APPROPRIATE VENTILATION SHOULD BE PROVIDED AND PROTECTIVE EQUIPMENT SHOULD BE WORN IN COMPLIANCE WITH OSHA STANDARD CURRENTLY 29 CFR 1910.134 [NIOSH APPROVED, AIR PURIFYING, HALF MASK OR FULL FACEPIECE RESPIRATOR WITH APPROPRIATE FILTER PAD OR CARTRIDGE(S)].

FOR FURTHER INFORMATION, REFER TO BABCOCK & WILCOX'S PAMPHLET "HEALTH AND SAFETY ASPECTS OF REFRACTORY CERAMIC FIBERS", DATED 05/85.

MATERIAL SAFETY DATA SHEET THE BABCOCK & WILCOX COMPANY INSULATING PRODUCTS DIVISION

PAGE 1 OF 2

MSD Identification/Trade Name and Synonyms

(NOTE: Labels on products will show individual product trade names)

KAOWOOL PAPER PRODUCTS:

2300 PAPER 2600 PAPER

DIE-CUT SHAPES (PAPER)

KAOWOOL MILLBOARD PROUDCTS:

822 MILLBOARD 823 MILLBOARD 830 MILLBOARD

KAOWOOL ROLLBOARD

KAOTEX 2000 KAOTEX 2000 ROPE

DEVELOPMENTAL MIX 182J

---- SECTION I -

Manufacturer's Name

BABCOCK & WILCOX, INSULATING PRODUCTS DIVISION

Address (Number, Street, City, State, Zip)

P.O. BOX 923, 2102 OLD SAVANNAH ROAD, AUGUSTA, GEORGIA 30903

Chemical Name and Synonyms

N/A MIXTURE

Chemical Family

ALUMINOSILICATE

Emergency Telephone Mumber

(404) 796-4200

Formula

N/A

Comments

N/A

100

----- SECTION II HAZARDOUS INGREDIENTS ----

A. AS MANUFACTURED REFRACTORY CERAMIC FIBER WT. %

2 f/cc\*

\*BABCOCK & WILCOX WORK PLACE EXPOSURE GUIDELINE

#### B. AFTER NORMAL USE

SEE SECTION IX

---- SECTION III PHYSICAL DATA -----

Boiling Point (F) N/A Vapor Pressure (mm Hg.) N/A

Specific Gravity Range (H2O = 1)

2.56 (BULK)

Vapor Density (Air = 1)

N/A INSOLUBLE Percent Volatile by Volume (\*)

Evaporation Rate (

N/A N/A

Solubility in Water Appearance and Odor

FIBER SHAPE. NO ODOR.

----- SECTION IV FIRE AND EXPLOSION HAZARD DATA -----

Extinguishing Media

Flash Point (Method Used)

Flammable Limit

N/A

N/A

Unusual Fire and Explosive Hazards Special Fire Fighting Procedures N/A

N/A

UEL

DATE PREPARED: 10/10/85 DATE REVISED:

NATERIAL SAFETY DATA SHEET THE BABCOCK & WILCOX COMPANY INSULATING PRODUCTS DIVISION

MSDS GROUP:

----- SECTION V HEALTH HAZARD DATA ---

Primary Route of Entry

INHALATION, INGESTION AND SKIN IRRITATION

Effects of Overexposure

BASED ON LIMITED TESTING, REFRACTORY CERAMIC FIBERS ARE A SUSPECTED CARCINOGEN IN LABORATORY ANIMALS. CURRENTLY, THERE ARE NO KNOWN CHRONIC HEALTH EFFECTS IN HUMANS FROM LONG-TERM EXPOSURE TO REFRACTORY CERAMIC FIBERS. INSULATION MANUFACTURERS ASSOCIATION (TIMA) IS SPONSORING ANIMAL INHALATION STUDIES AS WELL AS EPIDEMIOLOGICAL STUDIES OF WORKERS IN THE INDUSTRY. UNTIL DEFINITE ANSWERS BECOME AVAILABLE, STRICT ADHERENCE TO RECOMMENDED SAFE WORK PRACTICES DESCRIBED BLSEWHERE IN THIS MSDS IS ADVISED. THIS PRODUCT CONTAINS MINOR AMOUNTS OF BINDERS WHICH BURN OUT DURING FIRST HEAT UP.

**Emergency and Pirst Aid Procedures** TERMINATE EXPOSURE

	SECTION VI	FIRE, EXPLOSIV	E AND REACTIVITY	DATA	
N/A					

----- SECTION VII SPILL OR LEAK PROCEDURES -----

Waste Disposal Method Recommended Procedure ROUTINE HOUSEKEEPING

----- SECTION VIII SPECIAL PROTECTION INFORMATION -----

Respiratory Protection (Specify Type)

DUST RESPIRATOR IN COMPLIANCE WITH OSHA STANDARD CURRENTLY 29 CFR 1910.134 INIOSH APPROVED, AIR PURIFYING, HALF MASK OR FULL FACEPIECE RESPIRATOR WITH PROPRIATE FILTER PAD OR CARTRIDGE(S))

**Ventilation** 

Local Exhaust Mechanical (General)

FOLLOW OSHA STANDARD 29 CFR 1910.94 FOLLOW OSHA STANDARD 29 CFR 1910.94

Protective Gloves RECOMMENDED

Eve Protection

GOGGLES/SAFETY GLASSES RECOMMENDED

Other Protective Equipment

LONG SLEEVE, LOOSE FITTING CLOTHING AND BARRIER CREAM

Material DOES NOT appear on NTP and/or LAC lists of reports for Carcinogens

----- SECTION IX SPECIAL PRECAUTIONS ------Precautions To Be Taken After Use and Upon Removal

THIS PRODUCT AS MANUFACTURED IS AN ALUMINOSILICATE WHICH COULD TRANSFORM UPON HEATING TO MULLITE AND CRISTOBALITE (A FORM OF CRYSTALLINE SILICA). REMOVAL OF THIS PRODUCT AFTER USE MAY RESULT IN THE GENERATION OF DUST. REPEATED INHALA-TION OF RESPIRABLE FREE CRYSTALLINE SILICA DUST MAY CAUSE DELAYED LUNG INJURY (SILICOSIS). THE RECOMMENDED TLV/PEL FOR FREE CRYSTALLINE SILICA IS DERIVED FROM THE FORMULA: 10 mg/cu m

% Respirable quartz + 2

\*(Reference 1984-85 ACGIH TLV Booklet, Page 34). APPROPRIATE VENTILATION SHOULD BE PROVIDED AND PROTECTIVE EQUIPMENT SHOULD BE WORN IN COMPLIANCE WITH OSHA STANDARD CURRENTLY 29 CFR 1910 134 [NIOSH APPROVED, AIR PURIFYING, HALF MASK OR FULL PACEPIECE RESPIRATOR WITH APPROPRIATE FILTER PAD OR CARTRIDGE(S)].

FOR FURTHER INFORMATION, REFER TO BABCOCK & WILCOX'S PAMPHLET "HEALTH AND FETY ASPECTS OF REFRACTORY CERAMIC FIBERS", DATED 05/85.



PERMATEX INDUSTRIAL A Division of Loctite Corporation P.O. Box 11915 705 N. Mountain Road Newington, CT 06111 (203) 527-5211

# MATERIAL SAFETY DATA SHEET

I.	PRODUCT IDENTIFICATION			
	Product Name Product Type BELT DRESSING (AEROSOL)	Item Part		81248 81248
II.	COMPOSITION			
	Ingredients % by W	<u>t.</u>		<u>Hazard</u>
	Water 75-80 Polybutene 15-20 Dispersal Agent 2-3			
	PROPELLANT Isobutane		TLV	= 800 ppm. Flammable.
III.	CHEMICAL AND PHYSICAL PROPERTIES  Vapor Pressure Not available Vapor Density 1.0 (base) Solubility in Water 80% Appearance White liquid	рН	fic Gr ng Poi Not Mild	avity <u>0.95@70<sup>O</sup>F (base)</u> nt <u>~110<sup>O</sup>C (base)</u> available
IV.	TOXICITY AND HEALTH HAZARD  Toxicity Low by all routes.  Symptoms of Overexposure May cause dermat individuals.	TLV itis o		available.  onged contact in sensitive
	Emergency Treatment Procedures Ingestion: Do not induce vomiting. Keep in Inhalation: Remove to Fresh air. If sympostin Contact: Wash with soap and water. Eye Contact: Flush with water.  Personal Protection Eyes: Safety glasses or goggles. Skin: Rubber or vinyl gloves. Ventilation: Not normally necessary.	ndivid Loms p	ual ca ersist	Im. Obtain medical attention, obtain medical attention.

BELT I	DRESSING (AEROSOL)
٧.	FLAMMABILITY AND EXPLOSIVE PROPERTIES
	Flash point None (Aqueous) Method ona Explosive Limits (% by volume in air) Lower dna % Upper dna % Recommended Extinguishing Agents CO2, Foam, Dry Chemical Hazardous Products Formed by Fire or Thermal Decomposition: Irritating organic vapors. Unusual Fire or Explosion Hazards: Aerosol cans may burst above 130°F. Compressed Gasses Name Nitrogen Pressure at Room Temperature 120 psig
VI.	REACTIVITY DATA
	Stability [X] Stable [] Unstable Hazardous Polymerization [] May Occur [X] Will Not Occur Hazardous Decomposition Products (non-thermal) None known.
	Incompatibility Strong oxidizers.
VII.	SPILL OR LEAK AND DISPOSAL PROCEDURES
	Steps to be taken in case of spill or leak: Soak up in an inert absorbent.
	Recommended methods of disposal: Landfill or incinerate following EPA and local regulations. Do not incinerate pressurized cans.
VIII.	STORAGE AND HANDLING PROCEDURES
	Storage: Store below 1100F. Handling: No special precautions.
IX.	SHIPPING REGULATIONS

Consumer Commodity

Martin Hauser
Vice President - Epironmental Health & Safety
October 1, 1985

Aerosols, nonجflammable, n.o.s.

Prepared By:

Date:

Type or Class

Proper Shipping Name

DOT

ATAI

ORM-D

Class

TOT -

MATERIAL SAFETY DATA SHEET (MSDS)

SC-000-002 REV. 1 DATE 10/8/85 CODE 15-04

CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200

"HAZARD COMMUNICATION" AND TO VARIOUS STATE

"EMPLOYEE RIGHT TO KNOW" LAWS

COPYRIGHT 1985 STEEL FOUNDERS SOCIETY OF AMERICA

SECTION I PRODU	CT IDENTIFICATION
This MSDS supplied for:	
ASTM No.	ACI alloy designation (Grades)
A297/A297M-84	CE-30, CF-3, CF-3M, CF-3MA, CF-8,
A351/A351M-84	CF-8A, CF-8C, CF-8M, CF-10, CF-10MC, CF-16F, CF-20, CF-HOM, CG-6MMN, CG-8M,
A447/A447M-84	CG-12, CH-8, CH-10, CH-20, CK-20, CN-7M, CN-7MS, CPF-3, CPF-3A, CPF-3M,
A451-80	CPF-8, CPF-8A, CPF-8C, CPF-8M, CPF-10, CPH-10, CPH-20, CPK-20, CW-2M, CW-6MC, CW-7W, CW-12M, CW-12MW, CY-40
A494/A494M-84	Ch Thy Ch 12hy Ch-12hhy C1-40
A560/A560-84	HE, HE-35, HF, HF-30, HH, HH-30, HH-33, HI, HI-35, HK, HK-30, HK-40, HL, HL-30, HL-40, HN, HN-40, HP, HT, HT-30, HT-50,
A608-79	HU, HU-50, HW, HW-50, HX, HX-50
A743/A743-84	MC
A744/A744M-84	I, II, III
Mil-S 867 A	50Cr-50Ni, 50Cr-50Ni-Cb, 60Cr-40Ni
227227777777	

# EMERGENCY PHONE NUMBER:

**VENDOR NAME AND ADDRESS:** 

FIRE HAZARD CLASS: HEALTH: 0 FLAMMABILITY: 0 REACTIVITY: 0
THE FOURTH DIAMOND:

ANSI: CAUTION! WELDING, CUTTING, OR GRINDING ON THIS CASTING WILL GENERATE TOXIC DUST OR FUMES.

GENERATE TOXIC DUST OR FUMES.

SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	<u>P</u> E <u>L</u>
Aluminum	7429-90-5	0-0.25	10 mg/cu.m	N/E
Carbon	7440-44-0	0.03-0.75	N/E	N/E

INGREDIENT	CAS NO.	PERCENT	TLV	PAGE 2 PEL
Chromium Chromium (VI)*	7440-47-3	10-52	0.5 mg/cu.m	1 mg/cu.m
certain insoluble form	s		0.05 mg/cu.m	N/E
Cobalt	7440-48-4	0-2.5	0.1 mg/cu.m	0.1 mg/cu.m
	bium)	0-1.2	N/E	N/E
Copper (As dust)	7440-50-8	0-4	1.0 mg/cu.m	1.0 mg/cu.m
(As fume)			0.2 mg/cu.m	0.1 mg/cu.m
Iron (As fume)	7439-89-6	0-11	5 mg/cu.m	10 mg/cu.m
Manganese (As dust)	7439-96-5	0.30-6.00	C 5 mg/cu.m	C 5 mg/cu.m
(As fume)			1 mg/cu.m	C 5 mg/cu.m
Nickel	7440-02-0	10-72	1 mg/cu.m	1 mg/cu.m
Nitrogen	7727-37-9	0-0.3	N/E	N/E
Phosphorus	7723-14-0	0.02-0.40	0.1 mg/cu.m	0.1 mg/cu.m
Silicon	7440-21-3	0.50-3.50	10 mg/cu.m	15 mg/cu.m
			(as nuisance	
Sulfur	7704-34-9	0.02-0.05	N/E	N/E
Tantalum	7440-25-7	0-1.1	5 mg/cu.m	5 mg/cu.m
Titanium	7440-32-6	0-0.50	N/E	N/E
Tungsten	7440-33-7	0-5.25	5 mg/cu.m	N/E
Vanadium (as vanadium	oxide)		<b>-</b> .	•
(As dust)	1314-62-1	0-0.40	0.05 mg/cu.m	0.5 mg/cu.m
(As fume)			0.05 mg/cu.m	0.1 mg/cu.m

C means ceiling limit. These are limits which should not be exceeded, even for a short time. All other are 8 hr Time-weighted average concentrations.

Elements having a listed percentage greater than zero will be present in all grades. Those having a value of "0" may not be present in certain grades. Refer to Steel Founders' Society of America "Steel Castings Handbook" Supplement 2 for specifications on a particular ASTM alloy and grade.

\* Water insoluble hexavalent chromium is classified as a human carcinogen by the American Conference of Governmental Industrial Hygienists (ACGIH). Approximately 66% of the total chromium in welding fume is hexavalent, and only 5% of that is insoluble. Overexposure to hexavalent chromium is not likely if general welding fume is controlled. (The alloy and its dust does not contain insoluble hexavalent chromium.)

# SECTION III - OVERVIEW

There are no chemical hazards from these castings in solid form.

Machining, grinding, flame cutting, or welding on the casting will put contaminants in the air. Since the casting contains mostly chromium and/or nickel, most of the airborne contaminants will be

chromium and nickel dust and fume.

Welding or flame cutting may convert a fraction of the chromium the water insoluble hexavalent (carcinogenic) form.

GE 3

Some forms of nickel have been found to cause cancer in animals. One form, nickel subsulfide, which was present in an old smelting process no longer used, apparently caused nasal cancer in humans. Since then, studies have shown that the potential for ordinary forms of nickel and its oxides to cause cancer in humans is very weak, if it exists at all.

Because of this potential hazard from metal dust and fumes, machining, grinding, welding operations, etc, should be done under local exhaust ventilation. If ventilation is not adequate, wear a NIOSH approved dust and fume respirator.

Grinding on castings that have not been cleaned or that contain embedded sand may generate significant amounts of dust containing free silica, which can cause silicosis. The use of ventilation for control of metal dust and fume will also control airborne silica.

The other metals in high alloy steel castings are present in small amounts compared to the nickel and chromium. If airborne concentrations of chromium and nickel are controlled to levels below their respective TLVs and PELs, these minor constituents would also be adequately controlled.

# SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Solid, silver gray in color, no odor
BOILING POINT: variable depending on casting grade
VAPOR PRESSURE: N/A
VAPOR DENSITY: N/A
SOLUBILITY IN WATER: N/A
SPECIFIC GRAVITY: 8.9 for nickel
PERCENT VOLATILE BY VOLUME: N/A
EVAPORATION RATE: N/A

# SECTION V - FIRE AND EXPLOSION DATA

Castings will not burn or explode.

# SECTION VI - HEALTH HAZARD DATA

EYES: Metal particles in the eyes may cause irritation if not removed.

SKIN: None known.

BREATHING: Breathing high concentrations of chromium and/or nickel dust or fume may cause deep lung irritation. Some forms of these metals can cause cancer; refer to the Overview of this MSDS. Breathing excessive amounts of silica dust for a long time can cause silicosis. Silicosis causes shortness of breath, reduced capacity to do work, and weakens the defenses against other lung diseases.

SWALLOWING: N/A

NOISE: Grinding or machining castings is noisy. The OSHA limit for noise averaged over 8 hours is 90 decibels (dBA), hearing conservation program required if exposure is over 85 dBA. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

IF IN EYES: Metal particles should be removed by trained individuals such as a nurse or physician.

IF ON SKIN: N/A

IF BREATHED: (Fumes from welding): Move to fresh air.

IF SWALLOWED: N/A

# SECTION VII - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur.

STABILITY: Stable.

INCOMPATIBILITY: Chromium metal dust may burn or explode when in contact with Ammonium Nitrate.

SECTION VIII - SPILL OR LEAK PROCEDURES

# STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

If damaged, return castings to vendor or send to scrap reclaimer.

Collected dust from machining, welding, etc. may be classed as a "hazardous waste" depending on circumstances. Consult local authorities regarding disposal. 

SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: Wear a NIOSH approved respirator for dusts or fume if concentrations exceed the TLV or PEL. VENTILATION: Provide general ventilation and/or local exhaust if necessary to maintain concentrations below the TLVs. PROTECTIVE GLOVES: Work gloves advisable for handling castings. EYE PROTECTION: Safety glasses with side shields and/or face shields for particles (grinding). Welding goggles or helmet for welding.

OTHER PROTECTIVE EQUIPMENT: Wear a protective apron and gauntlets if arc-air gouging or cutting, or welding on castings.

If noise is at or above 90 dBA you should wear ear muffs or ear

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: No special precautions.

INFORMATION PRESENTED HEREIN HAS BEEN COMPILED CONSIDERED TO BE RELIABLE AND IS ACCURATE AND RELIABLE TO THE BEST OF OUR KNOWLEDGE AND BELIEF BUT IS NOT GUARANTEED TO

N/A means not N/E means none established. N/D means no data available.

PAGE 1

MATERIAL SAFETY DATA SHEET (MSDS) SC-000-008 REV. 1 DATE 10/8/85 CODE 06-04 CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200 "HAZARD COMMUNICATION" AND TO VARIOUS STATE "EMPLOYEE RIGHT TO KNOW" LAWS

COPYRIGHT STEEL FOUNDERS SOCIETY OF AMERICA 1985

SECTION I PRODUCT IDENTIFICATION

This MSDS supplied for:

ACI alloy designation (Grades) ASTM No.

A494/A494M-84 C2-100

A743M-84 M-255, M-30C, M-30H, M-35-1, M-35-2

A744M-84 N-7M, N-12M, N-12MV 

VENDOR NAME AND ADDRESS:

# EMERGENCY PHONE NUMBER:

FIRE HAZARD CLASS: HEALTH: 0 FLAMMABILITY: 0 REACTIVITY: 0 THE FOURTH DIAMOND:

ANSI: CAUTION! WELDING, CUTTING, OR GRINDING ON THIS CASTING WILL GENERATE TOXIC DUST OR FUMES. 

# SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Carbon	7440-44-0	0.07-1.00	N/E	N/E
Chromium	7440-47-3	0-1.00	0.5 mg/cu.m	1 mg/cu.m
Chromium (VI)				
certain insoluble for	ns		0.05 mg/cu.m	N/E
Cobalt	7440-48-4	0-2.5	0.1 mg/cu.m	0.1 mg/cu.m
Columbium	7440-03-1	0-3.0	N/E	N/E
(same as Niobium)			,	
Copper (As dust)	7440-50-8	1.25-33.0	1.0 mg/cu.m	1.0 mg/cu.m
(As fume)	•	A Company of the Company	0.2 mg/cu.m	0.1 mg/cu.m
Iron oxide (As fume)	1309-37-1	2.0-11.0		10 mg/cu.m
Manganese (As dust)	7439-96-5	1.00-1.50	C 5 mg/cu.m	C 5 mg/cu.m
(As fume)			1 mg/cu.m	C 5 mg/cu.m
Molybdenum	7439-98-7	26.0-33.0	10 mg/cu.m	15 mg/cu.m
Nickel*	7440-02-0	54.7-95	1 mg/cu.m	1 mg/cu.m
Phosphorus	7723-14-0	0.030-0.40	0.1 mg/cu.m	
Silicon	7440-21-3	1.00-4.5	10 mg/cu.m	15 mg/cu.m
,			(as nuisanc	e dust)
Sulfur	7704-34-9	0.030	N/E	N/E
Vanadium (as vanadium	oxide)			
(As dust)	7440-62-2	0.60	0.05 mg/cu.m	0.5 mg/cu.m
(As fume)			0.05 mg/cu.m	0.1 mg/cu.m
	******		225222222222	22212222

N/E means none established.

N/A means not applicable.

N/D means no data available.

2

C means ceiling limit. These are limits which should not be exceeded, even for a short time. All other are 8 hr. time-weighted average concentrations.

Elements having a listed percentage value in the alloy of greater than zero will be present in all grades. Those having a value of "0" may not be present in certain grades. Refer to Steel Founders' Society of America "Steel Castings Handbook" Supplement 2 for specifications on a particular ASTM alloy and grade.

\* Nickel has been shown to cause cancer in laboratory animals. However its potential to cause cancer in humans has not been determined.

# SECTION III - OVERVIEW

Nickel Based Cast Steels contain large percentages of nickel. There are usually no chemical hazards from these castings in solid form at room temperature. However, nickel can cause an allergic skin reaction in some sensitized individuals after repeated or prolonged contact.

Machining, grinding, flame cutting, or welding on the casting will create air contaminants. Since the major part of the casting is nickel, the dust or fumes will contain primarily nickel.

Breathing high concentrations of nickel dust for short time periods can cause irritation of the nose and throat. Nickel has been found to cause cancer in animals. One form, nickel subsulfide, which was present in an old smelting process no longer used, apparently caused nasal cancer in humans. Since then, studies have shown that the potential for ordinary forms of nickel and its oxides to cause cancer in humans is very weak, if it exists at all.

Because of the potential hazard from metal dust and fumes, machining, grinding, welding operations, etc, should be done under local exhaust ventilation. If ventilation is not adequate, wear a NIOSH approved dust respirator for grinding and a NIOSH approved fume respirator for welding.

Grinding on castings that have not been cleaned or that contain embedded sand may generate significant amounts of dust containing free silica, which can cause silicosis. The use of ventilation for control of metal dust and fume will also control airborne silica.

The other metals in Nickel Based Cast Steels are present in small amounts compared to the nickel. If airborne concentrations of nickel are controlled to levels below the TLV, these minor constituents would also be adequately controlled.

N/E means none established.

N/D means no data available.

N/A mes

Appendix33-000117

# SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Solid, silver gray in color, no odor BOILING POINT: variable depending on casting grade VAPOR PRESSURE: N/A VAPOR DENSITY: N/A

SOLUBILITY IN WATER: N/A SPECIFIC GRAVITY: 8.9 for nickel PERCENT VOLATILE BY VOLUME: N/A

EVAPORATION RATE: N/A

# SECTION V - FIRE AND EXPLOSION DATA

Castings will not burn or explode.

# SECTION VI - HEALTH HAZARD DATA

EYES: Metal particles in the eyes may cause irritation if not

SKIN: Allergic dermatitis in sensitized individuals BREATHING: Breathing high concentrations of nickel fume may cause asthma, pulmonary edema, or pumonary fibrosis. Some forms of these metals can cause cancer; refer to the Overview of this MSDS. Breathing excessive amounts of silica dust for a long time can cause silicosis. Silicosis causes shortness of breath, reduced

capacity to do work, and weakens the defenses against other lung diseases.

SWALLOWING: N/A

NOISE: Grinding or machining castings is noisy. The OSHA limit for noise averaged over 8 hours is 90 decibels (dBA), hearing conservation program required if exposure is over 85 dBA. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

IF IN EYES: Metal particles should be removed by trained individuals such as a nurse or physician.

IF ON SKIN: Wash dust from skin with soap and water.

IF BREATHED: (Fumes from welding): Move to fresh air.

IF SWALLOWED: N/A

# SECTION VII - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur.

STABILITY: Stable.

INCOMPATIBILITY: None known

# SECTION VIII - SPILL OR LEAK PROCEDURES

# STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

If damaged, return castings to vendor or send to scrap reclaimer.

Collected dust from machining, welding, etc. may be classed as a "hazardous waste" depending on circumstances. Consult local authorities regarding disposal.

# SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

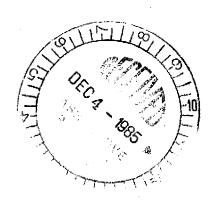
RESPIRATORY PROTECTION: Wear a NIOSH approved respirator for dusts or fume if concentrations exceed the TLV's. VENTILATION: Provide general ventilation and/or local exhaust if necessary to maintain concentrations below the TLVs. PROTECTIVE GLOVES: Work gloves advisable for handling castings.

EYE PROTECTION: Safety glasses with side shields and/or face shields for particles (grinding). Welding goggles or helmet for welding. OTHER PROTECTIVE EQUIPMENT: Wear a protective apron and quuntlets if arc-air gouging or cutting, or welding on castings. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: No special precautions.

INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE RELIABLE AND IS ACCURATE AND RELIABLE TO THE BEST OF OUR KNOWLEDGE AND BELIEF BUT IS NOT GUARANTEED TO BE SO.



\* N/A means not applicable. N/E means none established. N/D means no data available.

PAGE

MATERIAL SAFETY DATA SHEET (MSDS) SC-000-016 REV. 1 DATE 10/10/85 CODE 06-04 CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200 "HAZARD COMMUNICATION" AND TO VARIOUS STATE "EMPLOYEE RIGHT TO KNOW" LAWS

COPYRIGHT 1985 STEEL FOUNDERS SOCIETY OF AMERICA

# SECTION I PRODUCT IDENTIFICATION

This MSDS supplied for:

ACT allow designation (Grades)

9Q, 10N, 10Q, 11N, 11Q, 12N, 12Q, 13N,

130, 140, 16N

B2N, B2Q, B3N, B3Q, B4N, B4Q, C1Q,

D, LC2, LC2-1, LC3, LC4, LC9, WC4

A352/A352M-84

A217/A217M-84

A128/A128M-84

ASTM No.

A487/A487M-84

A732/A732M-84

A757/A757M-84

MIL-S-870B (SHIPS)

MIL-S-23008C

HY-40, HY-100

VENDOR NAME AND ADDRESS:

# EMERGENCY PHONE NUMBER:

FIRE HAZARD CLASS: HEALTH: 0 FLAMMABILITY: 0 REACTIVITY: 0 THE FOURTH DIAMOND:

ANSI: WARNING! WELDING, CUTTING, OR GRINDING ON THIS CASTING WILL GENERATE TOXIC DUST OR FUMES.

SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PE L
			*	
Boron		0.002-0.006		
(as boron oxide)	1303-86-2		10 mg/cu.m	15 mg/cu.m
Carbon	7440-44-0	0.12-1.3	N/E	N/E
Chromium	7440-47-3	0-1.85	0.5 mg/cu.m	1 mg/cu.m
Copper (As dust)	7440-50-8	0-0.50	1.0 mg/cu.m	1.0 mg/cu.m
(As fume)			0.2 mg/cu.m	0.1 mg/cu.m
Iron	7439-89-6	balance		
(as iron oxide fume)	1309-37-1		5 mg/cu.m	10 mg/cu.m

				PAGE 2
Manganese (As dust)	7439-96-5	0.40-14.0	C 5 mg/cu.m	C 5 mg/cu.m
(As fume)			1 mg/cu.m	C 5 mg/cu.m
Molybdenum	7439-98-7	0-1.20	10 mg/cu.m	15 mg/cu.m
Nickel	7440-02-0	0-10.0	1 mg/cu.m	1 mg/cu.m
Phosphorus	7723-14-0	0.02-0.07	0.1 mg/cu.m	0.1 mg/cu.m
Silicon	7440-21-3	0.30-1.00	10 mg/cu.m	15 mg/cu.m
		1,00	(as nuisance	
Sulfur	7704-34-9	0-0.05	N/E	
Titanium	7704 34-3	0-0.02	N/ E	N/E
(as titanium dioxide)	13463-67-7	0-0.02	10	3.5
			10 mg/cu.m	15 mg/cu.m
Tungsten	7440-33-7	0-0.10	5 mg/cu.m	N/E
Vanadium		0-0.10	_,	•
(as vanadium oxide)	1314-62-1			
(As dust)			0.05 mg/cu.m	0.5 mg/cu.m
(As fume)			0.05 mg/cu.m	0.1 mg/cu.m
,,			oros mg/ curm	O+1 mg/cuin

C means ceiling limit. These are limits which should not be exceeded, even for a short time. All other are 8 hr Time-weighted average concentrations.

Elements having a listed percentage greater than zero will be present in all grades. Those having a value of "0" may not be present in certain grades. Refer to Steel Founders' Society of America "Steel Castings Handbook" Supplement 2 for specifications on a particular ASTM alloy and grade.

# SECTION III - OVERVIEW

There are no chemical hazards from these castings in solid form at room temperature.

Dust or fumes are generated by machining, grinding, or welding on these castings. Since the castings contain a high percentage of iron, most of the dust or fume will be iron or iron oxide. There is no TLV for iron dust, but available information indicates that a concentration of 10 mg/cu.m., as if it were a nuisance dust, will serve as a guideline until a TLV is established.

Overexposure to iron oxide fume over a long time can cause siderosis, sometimes called "iron pigmentation" of the lung. It can be seen on a chest x-ray but causes little or no disability. Also see the Material Safety Data Sheet for the welding rod being used.

Since these castings contain up to 10 percent nickel, airborne contaminants from machining or welding will contain nickel dust or fume. If total welding fume is adequately controlled, nickel will also be controlled.

Some forms of nickel have been found to cause cancer in an old smelting process no longer used, apparently caused nasal cancer in humans. Since then, studies have shown that the potential for ordinary forms of nickel and its oxides to cause cancer in humans is very weak, if it exists at all.

Some grades contain manganese. Long-term overexposure to manganese dust or fume can cause manganese poisoning. If welding or flame cutting fume is controlled to the TLV for total fume, the manganese fume will be adequately controlled.

Grinding on castings that have not been cleaned or that contain embedded sand may generate significant amounts of dust containing free silica, which can cause silicosis. The use of ventilation for control of metal dust and fume will also control airborne silica.

Boron, carbon, chromium, copper, molybdenum, phosphorus, silicon, sulfur, titanium, tungsten, and vanadium are also contaimed in the castings in low amounts. Overexposure to these would not be likely. If the airborne concentration of nickel is controlled below its TLV and PEL, these minor constituents would also be adequately controlled.

# SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Solid, silver gray in color, no odor

BOILING POINT: variable depending on casting grade

VAPOR PRESSURE: N/A
VAPOR DENSITY: N/A

SOLUBILITY IN WATER: N/A

SPECIFIC GRAVITY: 7.86 for iron PERCENT VOLATILE BY VOLUME: N/A

EVAPORATION RATE: N/A

# SECTION V - FIRE AND EXPLOSION DATA

Castings will not burn or explode.

# SECTION VI - HEALTH HAZARD DATA

EYES: Metal particles in the eyes may cause irritation if not

\_\_\_\_\_\_\_\_\_\_\_

SKIN: None known.

BREATHING: Breathing high concentrations of nickel dust or fume may cause deep lung irritation. Some forms of nickel can cause cancer; refer to the Overview of this MSDS.

Breathing excessive amounts of silica dust for a long time can cause silicosis. Silicosis causes shortness of breath, reduced capacity to do work, and weakens the defenses against other lung diseases.

SWALLOWING: N/A

NOISE: Grinding or machining castings is noisy. The OSHA limit for noise averaged over 8 hours is 90 decibels (dBA), hearing conservation program required if exposure is over 85 dBA. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

на видина в видина в видина в тран в примет в п IF IN EYES: Metal particles should be removed by trained

individuals such as a nurse or physician.

IF ON SKIN: N/A
IF BREATHED: (Fumes from welding): Move to fresh air.

IF SWALLOWED: N/A

# SECTION VII - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur.

STABILITY: Stable.

INCOMPATIBILITY: Iron may cause violent decoposition of hydrogen peroxide (52%) by weight or greater.

# SECTION VIII - SPILL OR LEAK PROCEDURES

# STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

If damaged, return castings to vendor or send to scrap reclaimer.

Collected dust from machining, welding, etc. may be classed as a "hazardous waste" depending on circumstances. Consult local authorities regarding disposal.

# SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: Wear a NIOSH approved respirator for dusts or fume if concentrations exceed the TLV or PEL. VENTILATION: Provide general ventilation and/or local exhaust if necessary to maintain concentrations below the TLVs.

PROTECTIVE GLOVES: Work gloves advisable for handling castings.

EYE PROTECTION: Safety glasses with side shields and/or face shields for particles (grinding). Welding goggles or helmet for welding.

OTHER PROTECTIVE EQUIPMENT: Wear a protective apron and gauntlets if arc-air gouging or cutting, or welding on castings. If noise is at or above 90 dBA you should wear ear muffs or ear

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: No special precautions.

INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE RELIABLE AND IS ACCURATE AND RELIABLE TO THE BEST OF OUR KNOWLEDGE AND BELIEF BUT IS NOT GUARANTEED TO BE SO

金子 中国 医医尿 对自己的 电自动 医皮肤 建设 医自己 医皮肤 医性性 医性性 医性性 医性性性 医血管 N/A means not applicable. N/E means none established. N/D means no data available.

PAGE

MATERIAL SAFETY DATA SHEET (MSDS)
SC-000-015 REV. 1 DATE 10/11/85 CODE 06-04 CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200 "HAZARD COMMUNICATION" AND TO VARIOUS STATE "EMPLOYEE RIGHT TO KNOW" LAWS

COPYRIGHT 1985 STEEL FOUNDERS SOCIETY OF AMERICA

SECTION I PRODUCT IDENTIFICATION

This MSDS supplied for: Chromium/Nickel Alloyed

ASTM No.

ACI alloy designation (Grades)

A757/A757M-84

E1Q, E2N1, E2N2, E2N3, E2Q1, E2Q2, E2Q3

VENDOR NAME AND ADDRESS:

# EMERGENCY PHONE NUMBER:

FIRE HAZARD CLASS: HEALTH: 0 FLAMMABILITY: 0 REACTIVITY: 0 THE FOURTH DIAMOND:

ANSI: WARNING! WELDING, CUTTING, OR GRINDING ON THIS CASTING WILL GENERATE TOXIC DUST OR FUMES.

SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Carbon	7440-44-0	0.20-0.22	N/E	N/E
Chromium Chromium(VI)*	7440-47-3	1.35-1.85	0.5 mg/cu.m	1 mg/cu.m
(certain insoluble for	rms)		0.05 mg/cu.m	N/E
Copper (As dust) (As fume)	7440-50-8	0.50	1.0 mg/cu.m 0.2 mg/cu.m	1.0 mg/cu.: 0.1 mg/cu.:
Iron (As fume)	7439-89-6	balance	5 mg/cu.m	10 mg/cu m
Manganese (As dust) (As fume)	7439-96-5	0.40-0.70	C 5 mg/cu.m 1 mg/cu.m	C 5 mg/cu. C 5 mg/cu.
Molybdenum	7439-98-7	0.35-0.60	10 mg/cu.m	15 mg/cu.m
Nickel	7440-02-0	2.5-3.90	1 mg/cu.m	1 mg/cu.m
Phosphorus	7723-14-0	0.020-0.025	0.1 mg/cu.m	0.1 mg/cu.
Silicon	7440-21-3	0.60	10 mg/cu.m (as nuisance	15 mg/cu.m dust)
Sulfur	7704-34-9	0.020-0.025	N/E	N/E
Tungsten Vanadium	7440-33-7	0-0.10 0.03	5 mg/cu.m	N/E
(as vanadium oxide)	1314-62-1	e ·	<u> </u>	
(As dust)			0.05 mg/cu.m	
(As fume)			0.05 mg/cu.m	0.1 mg/cu.

N/A means not applicable. N/E means none established.

C means ceiling limit. These are limits which should not be exceeded, even for a short time. All other are 8 hr Time-weighted average concentrations.

Elements having a listed percentage greater than zero will be present in all grades. Those having a value of "0" may not be present in certain grades. Refer to Steel Founders' Society of America "Steel Castings Handbook" Supplement 2 for specifications on a particular ASTM alloy and grade.

\* Water insoluble hexavalent chromium is classified as a human carcinogen by the American Conference of Governmental Industrial Hygienists (ACGIH). Approximately 66% of the total chromium in welding fume is hexavalent, and only 5% of that is insoluble. Overexposure to hexavalent chromium is not likely if general welding fume is controlled. (The alloy and its dust does not contain insoluble hexavalent chromium.)

# SECTION III - OVERVIEW

There are no chemical hazards from these castings in solid form at room temperature.

Dust or fumes are generated by machining, grinding, or welding on these castings. Since the castings contain a high percentage of iron, most of the dust or fume will be iron or iron oxide. There is no TLV for iron dust, but available information indicates that a concentration of 10 mg/cu.m., as if it were a nuisance dust, will serve as a guideline until a TLV is established.

Overexposure to iron oxide fume over a long time can cause siderosis, sometimes called "iron pigmentation" of the lung. It can be seen on a chest x-ray but causes little or no disability. Also see the Material Safety Data Sheet for the welding rod being used.

Since these castings contain up to 10 percent chromium and up to 3.9% nickel, airborne contaminants from machining or welding will contain chromium and nickel dust or fume. If total welding fume is adequately controlled, chromium and nickel will also be controlled.

Welding or flame cutting may convert a small fraction of the chromium to the water insoluble hexavalent (carcinogenic) form.

Some forms of nickel have been found to cause cancer in animals. One form, nickel subsulfide, which was present in an old smelting process no longer used, apparently caused nasal cancer in humans. Since then, studies have shown that the potential for ordinary forms of nickel and its oxides to cause cancer in humans is very weak, if it exists at all.

Grinding on castings that have not been cleaned or that contain embedded sand may generate significant amounts of dust containing free silica, which can cause silicosis.

Carbon, copper, manganese, molybdenum, phosphorus, silicon, sulfur, tungsten, and vanadium are also contained in the castings in low amounts. Overexposure to these would not be likely. If airborne concentrations of total dust and fume are controlled to levels below their respective TLVs and PELs, these minor constituents would also be adequately controlled.

# SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Solid, silver gray in color, no odor

BOILING POINT: variable depending on casting grade VAPOR PRESSURE: N/A VAPOR DENSITY: N/A

SOLUBILITY IN WATER: N/A
SPECIFIC GRAVITY: 7.86 for iron

PERCENT VOLATILE BY VOLUME: N/A

EVAPORATION RATE: N/A

# SECTION V - FIRE AND EXPLOSION DATA

Castings will not burn or explode.

# SECTION VI - HEALTH HAZARD DATA

EYES: Metal particles in the eyes may cause irritation if not removed.

SKIN: None known.

BREATHING: Breathing high concentrations of chromium and/or nickel dust or fume may cause deep lung irritation. Some forms of these metals can cause cancer; refer to the Overview of this MSDS.

Breathing excessive amounts of silica dust for a long time can cause silicosis. Silicosis causes shortness of breath, reduced capacity to do work, and weakens the defenses against other lung diseases.

SWALLOWING: N/A

NOISE: Grinding or machining castings is noisy. The OSHA limit for noise averaged over 8 hours is 90 decibels (dBA), hearing conservation program required if exposure is over 85 dBA. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

IF IN EYES: Metal particles should be removed by trained individuals such as a nurse or physician.

IF ON SKIN: N/A

IF BREATHED: (Fumes from welding): Move to fresh air. IF SWALLOWED: N/A

# SECTION VII - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur.

STABILITY: Stable.

INCOMPATIBILITY: Chromium metal dust may burn or explode when in contact with ammonium nitrate.

SECTION VIII - SPILL OR LEAK PROCEDURES

# STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

If damaged, return castings to vendor or send to scrap reclaimer.

Collected dust from machining, welding, etc. may be classed as a "hazardous waste" depending on circumstances. Consult local authorities regarding disposal.

# SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: Wear a NIOSH approved respirator for dusts or fume if concentrations exceed the TLV or PEL. VENTILATION: Provide general ventilation and/or local exhaust if necessary to maintain concentrations below the TLVs. PROTECTIVE GLOVES: Work gloves advisable for handling castings.

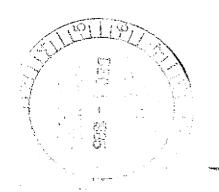
EYE PROTECTION: Safety glasses with side shields and/or face shields for particles (grinding). Welding goggles or helmet for OTHER PROTECTIVE EQUIPMENT: Wear a protective apron and gauntlets

if arc-air gouging or cutting, or welding on castings. If noise is at or above 90 dBA you should wear ear muffs or ear

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: No special precautions.

INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM CONSIDERED TO BE RELIABLE AND IS ACCURATE AND RELIABLE TO THE BEST OF OUR KNOWLEDGE AND BELIEF BUT IS NOT GUARANTEED TO BE SO.



MATERIAL SAFETY DATA SHEET (MSDS)

SC-000-009 REV. 0 DATE 10/11/85 CODE 06-04

CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200

"HAZARD COMMUNICATION" AND TO VARIUS STATE

"EMPLOYEE RIGHT TO KNOW" LAWS

# COPYRIGHT 1985 STEEL FOUNDERS SOCIETY OF AMERICA

140

260-210L

#### SECTION I PRODUCT IDENTIFICATION

This MSDS supplied for:

ASTM No.

A128/A128M-84

A148/A148M-84

A216/A216M-84

A217/A217M-84

A352/A352M-84

A356/A356M-84

A426-80

A486/A486M-84

A487/A487M-84

A597/A597M-84

A600-79

A732/A732M-84

A757/A757M-84

SAE AUTOMOTIVE

J435c

0022, 0025, 0030, 0050A, 0050B, 080, 090, 0105, 0120, 0150, 0175

ACI alloy designation (Grades)

WC5, WCA, WCB, WCC

A, AIQ, A2Q, AN, AQ, B, B-1, B-2, B-3, B-4, BN, BQ, C, CN, CQ, CP-1, CP-2, CP-15, CS-5, DN, E-1, E-2, F, LC-1,

LCA, LCB, LCC, N-1, N-2, U-60-30, WC1,

1, 1A, 1N, 1Q, 2, 2A, 2N, 2Q, 3A, 3Q, 4Q, 4QA, 4N, 5, 5N, 6N, 6Q, 13Q,

60-30, 65-35, 70, 70-36, 70-40, 80-40,

80-50, 90, 90-60, 105-85, 115-95, 120, 135-125, 150-135, 160-145, 165-150,

165-150L, 210-180, 210-180L, 260-210,

<u>AAR</u>

M201-81

A, B, C, D, E

ABS

1, 2, 3, 4, Hull

FEDERAL

QQ-8-681F

N-1, N-2, U-60-30, 60-30, 65-35, 70-36 70-40, 80-40, 80-50, 90-60, 105-85, 90-60, 105-85, 120-95, 150-125, 175-145

MIL-S-15083B (NAVY) PAGE 2 B, CW, 65-35, 70-36, 80-40, 80-50, 90-60, 105-85, 120-95, 150-125

0.05 mg/cu.m 0.5 mg/cu.m

0.05 mg/cu.m 0.1 mg/cu.m

MIL-S-46052A (SHIPS)

180-150, 220-180, 260-210

LLOYDŚ

(As dust)

(As fume)

VENDOR NAME AND ADDRESS:

# EMERGENCY PHONE NUMBER:

FIRE HAZARD CLASS: HEALTH: 0 FLAMMABILITY: 0 REACTIVITY: 0
THE FOURTH DIAMOND:

ANSI: CAUTION: WELDING, CUTTING, OR GRINDING ON THIS CASTING WILL GENERATE IRRITATING DUST OR FUMES.

SECTION II - HAZARDOUS COMPONENTS

#### CAS NO. TLV INGREDIENT PERCENT PE L Carbon 7440-44-0 0 - 1.45N/E N/E Chromium 7440-47-3 0-0.90 0.5 mg/cu.m 1 mg/cu.m Copper (As dust) 7440-50-8 0-0.50 1.0 mg/cu.m 1.0 mg/cu.m (As fume) 0.2 mg/cu.m 0.1 mg/cu.m Iron oxide (As fume) 1309-37-1 balance 5 mg/cu.m 10 mg/cu.m Manganese (As dust) C 5 mg/cu.m C 5 mg/cu.m 7439-96-5 0-14.0(As fume) 1 mg/cu.m C 5 mg/cu.m Molybdenum 7439-98-7 0-2.1 10 mg/cu.m 15 mg/cu.m Nickel\* 7440-02-0 0-1.0 1 mg/cu.m 1 mg/cu.m 7723-14-0 0-0.07 0.1 mg/cu.m 0.1 mg/cu.m Phosphorus 15 mg/cu.m 7440-21-3 10 mg/cu.m Silicon 0 - 2.25(as nuisance dust) Sulfur 7704-34-9 0 - 0.06N/E N/E 7440-33-7 0 - 0.255 mg/cu.m N/E Tungsten Vanadium (as vanadium oxide)

C means ceiling limit. These are limits which should not be exceeded, even for a short time. All other limits are 8-hr Time-weighted average concentrations.

0 - 0.35

7440-62-2

Elements having a listed percentage greater than zero will be present in all grades. Those having a value of "0" may not be present in certain grades. Refer to Steel Founders' Society of America "Steel Castings Handbook" Supplement 2 for specifications on a particular alloy and grade.

\* Nickel has been shown to cause cancer in laboratory animals. However its potential to cause cancer in humans has not been determined.

### SECTION III - OVERVIEW

There are no chemical hazards from these castings in solid form at room temperature.

Dust or fumes are generated by machining, grinding, or welding on these castings. Since the castings contain a high percent of iron, most of the dust or fume will be iron or iron oxide. There is no TLV for iron dust, but available information indicates that a concentration of 10 mg/cu.m., as if it were a nuisance dust, will serve as a guideline until a TLV is established.

High production dry machining of gray iron castings usually requires local exhaust ventilation.

Flame cutting, arc gouging, or welding on the casting generates iron oxide fume. Inhalation of too much iron oxide fume over a long time can cause siderosis, sometimes called "iron rich too much iron oxide fume over a long time can cause siderosis, sometimes called "iron rich to be siderosis, sometimes called pigmentation" of the lung. It can be seen on a chest x-ray but causes little or no disability. Also see the Material Safety Data Sheet for the welding rod being used.

Some grades contain manganese. Long term overexposure to manganese dust or fume can cause manganese poisoning. If welding or flame cutting fume is controlled to the TLV for total fume, the manganese fume will also be controlled.

Some forms of nickel have been found to cause cancer in animals. One form, nickel subsulfide, which was present in an old smelting process no longer used, apparently caused nasal cancer in humans. Since then, studies have shown that the potential for ordinary forms of nickel and its oxides to cause cancer in humans is very weak, if it exists at all. The nickel content of the casting is so low (less than 1%) that over-exposure is not likely.

Grinding on castings that have not been cleaned or that have sand embedded in the iron will generate significant amounts of dust containing free silica, which can cause silicosis. Good local ventilation is frequently required to prevent over-exposure in this situation. If good ventilation is not available, use a NIOSH-approved dust respirator.

Carbon, chromium, copper, molybdenum, phosphorus, silicon, sulfur, tungsten, and vanadium are also contained in the casting in low amounts. Over-exposure to these would not be likely.

# SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Solid, silver gray in color, no odor BOILING POINT: variable depending on casting grade

VAPOR PRESSURE: N/A VAPOR DENSITY: N/A

SOLUBILITY IN WATER: N/A

SPECIFIC GRAVITY: 7.86 for iron PERCENT VOLATILE BY VOLUME: N/A

EVAPORATION RATE: N/A

# SECTION V - FIRE AND EXPLOSION DATA

Castings will not burn or explode.

# SECTION VI - HEALTH HAZARD DATA

EYES: Metal particles in the eyes may cause irritation if not removed.

SKIN: None known

BREATHING: Prolonged or repeated overexposure to iron oxide produced in grinding or welding may cause siderosis. Overexposure to manganese dust can cause manganism. Symptoms of manganism are sleepiness, weakness in the legs, emotional disturbances, uncontrollable laughter, and spastic gait. Breathing excessive amounts of silica dust for a long time can cause silicosis. Silicosis causes shortness of breath, reduced capacity to do work, and weakens the defenses against other lung diseases. SWALLOWING: N/A

NOISE: Grinding or machining castings is noisy. The OSHA limit for noise averaged over 8 hours is 90 decibels (dBA), hearing conservation program required if exposure is over 85 dBA. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

IF IN EYES: Metal particles should be removed by trained individuals such as a nurse or physician.

IF ON SKIN: N/A

IF BREATHED: (Fumes from welding): Move to fresh air.

IF SWALLOWED: N/A

# SECTION VII - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur.

STABILITY: Stable.

INCOMPATIBILITY: Iron may cause violent decomposition of hydrogen peroxide (52% by weight or greater)

# SECTION VIII - SPILL OR LEAK PROCEDURES

# STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

If damaged, return castings to vendor or send to scrap reclaimer.

Collected dust from machining, welding, etc. may be classed as a Consult local "hazardous waste" depending on circumstances.

authorities regarding disposal.

N/A means not applicable. N/E means none established. N/D means no data available.

# SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: Wear a NIOSH approved respirator for dusts or fume if concentrations exceed the TLV's.

VENTILATION: Provide general ventilation and/or local exhaust if necessary to maintain concentrations below the TLVs.

PROTECTIVE GLOVES: Work gloves advisable for handling castings.

EYE PROTECTION: Safety glasses with side shields and/or face shields for particles (grinding). Welding goggles or helmet for welding.

OTHER PROTECTIVE EQUIPMENT: Wear a protective apron and gauntlets if arc-air gouging or cutting, or welding on castings.

If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: No special precautions.

THE INFORMATION PRESENTED HERE HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE RELIABLE AND IS ACCURATE AND RELIABLE TO THE BEST OF OUR KNOWLEDGE AND BELIEF BUT IS NOT GUARANTEED TO BE SO.

# MOBIL OIL CORPORATION MATERIAL SAFETY DATA BULLETIN)

SUPPLIER:

MOBIL OIL CORP.

CHEMICAL NAMES AND SYNONYMS:

PETROLEUM HYDROCARBONS

USE OR DESCRIPTION:

INDUSTRIAL FUEL

HEALTH EMERGENCY TELEPHONE:
(212) 883-4411
TRANSPORT EMERGENCY TELEPHONE:
(800) 424-9300 (CHEMTREC)

\*\*\*\*\*\*\*\* II. TYPICAL CHEMICAL AND PHYSICAL PROPERTIES: \*\*\*\*\*\*\*\*\*

APPEARANCE: DARK LIQUID

VISCOSITY AT 100 F, SUS: >234.0 AT 40 C, CS: >50.0

VISCOSITY AT 210 F, SUS: NE AT 100 C, CS: NE

FLASH POINT F(C): >140(60) (ASTM D-93)

MELTING POINT F(C): NA POUR POINT F(C): 20(-7)

BOILING POINT F(C): > 400(204)

RELATIVE DENSITY, 15/4 C: 0.969 SOLUBILITY IN WATER: NEGLIGIBLE

VAPOR PRESSURE-MM HG 20C: < .1

NA=NOT APPLICABLE NE=NOT ESTABLISHED D=DECOMPOSES
FOR FURTHER INFORMATION, CONTACT YOUR LOCAL MARKETING OFFICE.

KEY TO SOURCES: A=ACGIH-TLV, A\*=SUGGESTED-TLV, M=MOBIL, O=OSHA NOTE: LIMITS SHOWN FOR GUIDANCE ONLY. FOLLOW APPLICABLE REGULATIONS.

\* IV. HEALTH HAZARD DATA \*\*\*\*\*\*\*\*\*\*\*\*\*\*

EFFECTS OF OVEREXPOSURE: \*\*\*\* WARNING: H2S A HIGHLY TOXIC GAS MAY BE PRESENT, SEE SECTION XI. SLIGHT EYE IRRITATION. SLIGHT SKIN IRRITATION. RESPIRATORY IRRITATION, DIZZINESS, NAUSEA, LOSS OF CONSCIOUSNESS. PROLONGED, REPEATED SKIN CONTACT MAY RESULT IN SKIN IRRITATION OR MORE SERIOUS SKIN DISORDERS. \*\*\*\*NOTE: THIS PRODUCT CONTAINS AROMATIC OILS. UNDER CONDITIONS OF POOR PERSONAL HYGIENE AND PROLONGED, REPEATED CONTACTS, SOME AROMATIC OILS HAVE BEEN SUSPECTED AS A CAUSE OF SKIN CANCER IN HUMANS.

\*\*\*\*\*\*\*\*\*\* V. EMERGENCY AND FIRST AID PROCEDURES \*\*\*\*\*\*\*\*\*\*

'E CONTACT: FLUSH WITH WATER.

- KIN CONTACT: WASH CONTACT AREAS WITH SOAP AND WATER OR WATERLESS SKIN CLEANER. DO NOT WEAR ORDINARY CLOTHING WET WITH THIS PRODUCT. REMOVE CONTAMINATED CLOTHING. LAUNDER CONTAMINATED CLOTHING BEFORE REUSE.
- INHALATION: REMOVE FROM FURTHER EXPOSURE. IF UNCONSCIOUSNESS OCCURS, SEEK IMMEDIATE MEDICAL ASSISTANCE AND CALL A PHYSICIAN. IF BREATHING HAS STOPPED, USE MOUTH TO MOUTH RESUSCITATION.
- INGESTION: IF SWALLOWED, IMMEDIATELY GIVE 1 TO 2 GLASSES OF WATER AND CALL A PHYSICIAN, HOSPITAL EMERGENCY ROOM OR POISON CONTROL CENTER FOR ASSISTANCE. DO NOT INDUCE VOMITING OR GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

FLAMMABLE LIMITS. LEL: 1.0 UEL: 5.0

EXTINGUISHING MEDIA: CARBON DIOXIDE, FOAM, DRY CHEMICAL AND WATER FOG. SPECIAL FIRE FIGHTING PROCEDURES: FIREFIGHTERS MUST USE SELF-CONTAINED BREATHING APPARATUS.

UNUSUAL FIRE AND EXPLOSION HAZARDS: MATERIAL IS COMBUSTIBLE.

CONDITIONS TO AVOID: HEAT, SPARKS, FLAME AND BUILD UP OF STATIC ELECTRICITY.

NCOMPATIBILITY (MATERIALS TO AVOID): STRONG OXIDIZERS
AZARDOUS DECOMPOSITION PRODUCTS: SULFUR OXIDES AND H2S. CARBON MONOXIDE.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

\*

ENVIRONMENTAL IMPACT: REPORT SPILLS AS REQUIRED TO APPROPRIATE

AUTHORITIES. U. S. COAST GUARD REGULATIONS REQUIRE IMMEDIATE

REPORTING OF SPILLS THAT COULD REACH ANY WATERWAY INCLUDING

INTERMITTENT DRY CREEKS. REPORT SPILL TO COAST GUARD TOLL FREE

NUMBER 800-424-8802.

PROCEDURES IF MATERIAL IS RELEASED OR SPILLED: ADSORB ON FIRE RETARDANT TREATED SAWOUST, DIATOMACEOUS EARTH, ETC. SHOVEL UP AND DISPOSE OF AT AN APPROPRIATE WASTE DISPOSAL FACILITY IN ACCORDANCE WITH CURRENT APPLICABLE LAWS AND REGULATIONS, AND PRODUCT CHARACTERISTICS AT TIME OF DISPOSAL.

WASTE MANAGEMENT: DISPOSE OF WASTE BY SUPERVISED INCINERATION IN COMPLIANCE WITH APPLICABLE LAWS AND REGULATIONS.

\*

EYE PROTECTION: NORMAL INDUSTRIAL EYE PROTECTION PRACTICES SHOULD BE EMPLOYED.

SKIN PROTECTION: IF CONTACT IS LIKELY, OIL IMPERVIOUS CLOTHING SHOULD BE WORN.

RESPIRATORY PROTECTION: APPROVED RESPIRATORY PROTECTIVE EQUIPMENT MUST BE USED IN HIGH VAPOR OR MIST CONCENTRATIONS.

ENTILATION: VENTILATION DESIRABLE AND EQUIPMENT SHOULD BE EXPLOSION PROOF. USE IN WELL VENTILATED AREA.

OTHER: \*\*\*INHALATION HAZARD: CONTAINS TRACE AMOUNTS OF HZS.
ENVIRONMENT SHOULD BE TESTED FOR CONTAMINANT BEFORE ENTERING AREA.

```
********************** X. SPECIAL PRECAUTIONS *************
HANDLING: AVOID INHALATION OF VAPORS OR MISTS. AVOID PROLONGED
    REPEATED SKIN CONTACT AND BREATHING MISTS/VAPORS. TRACE AMOUNTS OF
    H2S MAY BE PRESENT. KEEP FACE CLEAR OF TANK AND/OR TANK CAR
    OPENINGS.
```

STORE IN A COOL AREA. SEE APPENDIX FOR PRECAUTIONARY/LABEL. FL-288

STORED MATERIALS MUST BE LABELED AS: COMBUSTIBLE.

```
********************** XI. TOXICOLOGICAL DATA **************
                          ---ACUTE---
```

ORAL TOXICITY (RATS): MODERATELY TOXIC(ESTIMATED) ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

DERMAL TOXICITY (RABBITS): MODERATELY TOXIC(ESTIMATED) ===BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

INHALATION TOXICITY (RATS): MODERATELY TOXIC(ESTIMATED) --- BASED ON

TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

EYE IRRITATION (RABBITS): MAY CAUSE SLIGHT IRRITATION. ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

SKIN IRRITATION (RABBITS): MAY CAUSE SLIGHT IRRITATION ON PROLONGED OR REPEATED CONTACT. --- BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

---CHRONIC OR SPECIALIZED (SUMMARY)---\*\*\*SKIN TUMORIGENICITY: POSITIVE IN MICE. (ESTIMATED). • ---OTHER DATA---

\*\*\*\* KEEP FACE CLEAR OF TANK AND/OR TANK CAR OPENINGS, HYDROGEN SULFIDE (H2S) MAY COLLECT IN THE VAPOR SPACE OF TANKS OR OTHER ENCLOSED VESSELS. H25 IS AN EXTREMELY FLAMMABLE, VERY HIGHLY TOXIC GAS. HZS ACTS AS A CHEMICAL ASPHYXIANT, PREVENTING THE BODY FROM UTILIZING DXYGEN IN THE TISSUE. IT CAN BE IRRITATING TO THE EYES AT 10 PPM AND TO THE RESPIRATORY TRACT AT 50-100 PPM AFTER 1-HOUR EXPOSURE. SUFFICIENTLY HIGH CONCENTRATIONS CAN RESULT IN IMMEDIATE COLLAPSE AND DEATH.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* XII. REGULATORY INFORMATION \*\*\*\*\*\*\*\*\*\*\*\* TSCA INVENTORY STATUS: ALL COMPONENTS ARE REGISTERED. EINECS INVENTORY STATUS: ALL COMPONENTS ARE REGISTERED. DOT: HAZARD CLASS: COMBUSTIBLE LIQUID THE FOLLOWING PRODUCT INGREDIENTS ARE CITED ON THE LISTS BELOW: 

CAS NUMBER LIST CITATIONS CHENICAL NAME \*\*\* NO INGREDIENT CITATIONS \*\*\*

# 16 = FL RTK. 17 = PA RTK.

INFORMATION GIVEN HEREIN IS OFFERED IN GOOD FAITH AS ACCURATE, BUT WITHOUT GUARANTEE. CONDITIONS OF USE AND SUITABILITY OF THE PRODUCT FOR PARTICULAR USES ARE BEYOND OUR CONTROL; ALL RISKS OF USE OF THE PRODUCT ARE THEREFORE ASSUMED BY THE USER AND WE EXPRESSLY DISCLAIM ALL WARRANTIES DE EVERY KIND AND NATURE, INCLUDING WARRANTIES DE MERCHANIABILITY AND FITNESS EDR A PARTICULAR PURPOSE IN RESPECT IN THE USE OR SUITABILITY OF THE PRODUCT. NOTHING IS INTENDED AS A RECOMMENDATION FOR USES WHICH INFRINGE VALID PATENTS OR AS EXTENDING LICENSE UNDER VALID PATENTS. APPROPRIATE WARNINGS AND SAFE HANDLING PROCEDURES SHOULD BE PROVIDED TO HANDLERS AND USERS.

\*

PREPARED BY: MOSIL OIL CORPORATION

ENVIRONMENTAL AFFAIRS AND TOXICOLOGY DEPARTMENT, PRINCETON, NJ FOR FURTHER INFORMATION, CONTACT:

MOBIL OIL CORPORATION, PRODUCT FORMULATION AND QUALITY CONTROL 3225 GALLOWS ROAD, FAIRFAX, VA 22037 (703) 849-3265

PRECAUTIONARY LABEL TEXT FOR PACKAGED PRODUCTS:

CONTAINS AROMATIC PETROLEUM DIL

WARNING.

MAY CAUSE IRRITATION OR MORE SERIOUS SKIN DISORDERS ON PROLONGED, REPEATED SKIN CONTACT.

COMBUSTIBLE.

PROLONGEO SKIN CONTACT HAS CAUSED SKIN CANCER IN LABORATORY ANIHALS.

AVOID CONTACT WITH SKIN AND CLOTHING. AVOID BREATHING VAPOR OR MIST. KEEP AWAY FROM HEAT AND FLAME. USE WITH ADEQUATE VENTILATION.

WHEN CONTACT IS LIKELY, WEAR OIL IMPERVIOUS CLOTHING AND GLOVES.
ORDINARY CLOTHING WET WITH THIS PRODUCT MUST BE REMOVED.
LAUNDER CONTAMINATED CLOTHING BEFORE REUSE.
DISCARD SHOES IF MATERIAL HAS PENETRATED TO INSIDE SURFACE.

FIRST AID: IN CASE OF SKIN CONTACT, THOROUGHLY WASH AREA WITH SOAP AND WATER.

FOR COMMERCIAL USE ONLY.

REFER TO PRODUCT MATERIAL SAFETY DATA BULLETING FOR FURTHER SAFETY AND HEALTH INFORMATION.

MOBIL OIL CORPORATION, NEW YORK, N.Y. 10017 FL-238(5/84)

MATERIAL SAFETY DATA SHEET (MSDS)

SC-000-019 REV. 0 DATE 10/14/85 CODE 06-04

CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200

"HAZARD COMMUNICATION" AND TO VARIOUS STATE

"EMPLOYEE RIGHT TO KNOW" LAWS

COPYRIGHT 1985 STEEL FOUNDERS SOCIETY OF AMERICA

SECTION	Т	PRODUCT	IDENTIFICATION
SECTION		FRUDUCI	IDENTIFICATION

This MSDS supplied for: \

ASTM No.

ACI alloy designation (Grades)

A128/128M-84

C, C5, C12, C23, C24, CA-2, CH-12, CH-13, CO-1, CP5, CP5b, CP7, CP9

A217/A217M-84

CP11, CP12, CP21, CP22

A356/A356M-84

DlN1, DlN2, DlQ1

A389/A389M-84

WC6, WC9, WC11

A426-80

1, 2, 3, 6, 7Q, 8, 8Q, 9, 9N, 9Q, 10, 12Q, 15A

A487/A487M-84

A597/A597M-84

A732/A732M-84

A757/A757M-84

MIL-S-15464B

(SHIPS)

VENDOR NAME AND ADDRESS:

# EMERGENCY PHONE NUMBER:

FIRE HAZARD CLASS: HEALTH: 0 FLAMMABILITY: 0 REACTIVITY: 0
THE FOURTH DIAMOND:

ANSI: WARNING! WELDING, CUTTING, OR GRINDING ON THIS CASTING WILL GENERATE TOXIC DUST OR FUMES.

SECTION II - HAZARDOUS COMPONENTS

INGREDIENT CAS NO. PERCENT TLV PEL

Carbon 7440-44-0 0.20-1.35 N/E N/E

Chromium 7440-47-3 0.75-10.0 0.5 mg/cu.m 1 mg/cu.m

Chromium(VI)\*

(certain insoluble forms)

0.05 mg/cu.m N/E

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Copper (As dust) (As fume) Iron (As fume)	7440-50-8 7439-89-6	0-0.50	1.0 mg/cu.m 0.2 mg/cu.m 5 mg/cu.m	1.0 mg/cu.m 0.1 mg/cu.m 10 mg/cu.m
Manganese (As dust) (As fume)	7439-96-5	0.30-14.0	C 5 mg/cu.m 1 mg/cu.m	C 5 mg/cu.m C 5 mg/cu.m
Molybdenum Nickel Phosphorus	7439-98-7 7440-02-0	0-1.75 0-0.50	10 mg/cu.m 1 mg/cu.m	15 mg/cu.m 1 mg/cu.m
Silicon	7723-14-0 -7440-21-3	0.025-0.07 0.20-2.00	0.1 mg/cu.m 10 mg/cu.m (as nuisance	0.1 mg/cu.m 15 mg/cu.m dust)
Sulfur	7704-34-9	0.025-1.00	N/E	N/E
Tungsten Vanadium	7440-33-7	0-1.70 0-1.20	5 mg/cu.m	N/E
(as vanadium oxide) (As dust) (As fume)	1314-62-1	·	0.05 mg/cu.m 0.05 mg/cu.m	

C means ceiling limit. These are limits which should not be exceeded, even for a short time. All other are 8 hr Time-weighted average concentrations.

Elements having a listed percentage greater than zero will be present in all grades. Those having a value of "0" may not be present in certain grades. Refer to Steel Founders' Society of America "Steel Castings Handbook" Supplement 2 for specifications on a particular ASTM alloy and grade.

\* Water insoluble hexavalent chromium is classified as a human carcinogen by the American Conference of Governmental Industrial Hygienists (ACGIH). Approximately 66% of the total chromium in welding fume is hexavalent, and only 5% of that is insoluble. Overexposure to hexavalent chromium is not likely if general welding fume is controlled. (The alloy and its dust does not contain insoluble hexavalent chromium.)

# SECTION III - OVERVIEW

There are no chemical hazards from these castings in solid form at room temperature.

Dust or fumes are generated by machining, grinding, or welding on these castings. Since the castings contain a high percentage of iron, most of the dust or fume will be iron or iron oxide. There is no TLV for iron dust, but available information indicates that a concentration of 10 mg/cu.m., as if it were a nuisance dust, will serve as a guideline until a TLV is established.

Overexposure to iron oxide fume over a long time can cause siderosis, sometimes called "iron pigmentation" of the lung. It can be seen on a chest x-ray but causes little or no disability. Also see the Material Safety Data Sheet for the welding rod being used.

Since these castings contain up to 10 percent chromium, airborne contaminants from machining or welding will contain chromium dust or fume. If total welding fume is adequately controlled, chromium will also be controlled.

Welding or flame cutting may convert a small fraction of the chromium to the water insoluble hexavalent (carcinogenic) form.

These casting contain up to 0.5% nickel. Some forms of nickel have been found to cause cancer in animals. One form, nickel subsulfide, which was present in an old smelting process no longer used, apparently caused masal cancer in humans. Since then, studies have shown that the potential for ordinary forms of nickel and its oxides to cause cancer in humans is very weak, if it exists at all.

Some grades contain moderate levels of manganese. Long term overexposure to manganese dust or fume can cause manganese poisoning. If welding or flame cutting fume is controlled to the TLV for total fume, the manganese fume will also be controlled.

Grinding on castings that have not been cleaned or that contain embedded sand may generate significant amounts of dust containing free silica, which can cause silicosis.

Carbon, copper, molybdenum, phosphorus, silicon, sulfur, tungsten, and vanadium are also contained in the castings in low amounts. Overexposure to these would not be likely. If airborne concentrations of total dust and fume are controlled to levels below their respective TLVs and PELs, these minor constituents would also be adequately controlled.

# SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Solid, silver gray in color, no odor BOILING POINT: variable depending on casting grade VAPOR PRESSURE: N/A VAPOR DENSITY: N/A

VAPOR DENSITY:

SOLUBILITY IN WATER: N/A

SPECIFIC GRAVITY: 7.86 for iron PERCENT VOLATILE BY VOLUME: N/A

EVAPORATION RATE: N/A

# SECTION V - FIRE AND EXPLOSION DATA

Castings will not burn or explode.

EYES: Metal particles in the eyes may cause irritation if not removed.

SKIN: None known.

BREATHING: Prolonged or repeated overexposure to iron oxide produced in grinding or welding may cause siderosis. Overexposure to manganese dust can cause manganism. Symptoms of manganism are sleepiness, weakness in the legs, emotional disturbances, uncontrollable laughter, and spastic gait. Breathing excessive amounts of silica dust for a long time can cause silicosis. Silicosis causes shortness of breath, reduced capacity to do work, and weakens the defenses against other lung diseases. SWALLOWING: N/A

NOISE: Grinding or machining castings is noisy. The OSHA limit for noise averaged over 8 hours is 90 decibels (dBA), hearing conservation program required if exposure is over 85 dBA. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

IF IN EYES: Metal particles should be removed by trained individuals such as a nurse or physician.

IF ON SKIN: N/A

IF BREATHED: (Fumes from welding): Move to fresh air.

IF SWALLOWED: N/A

# SECTION VII - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur.

STABILITY: Stable.

INCOMPATIBILITY: Chromium metal dust may burn or explode when in contact with ammonium nitrate.

# SECTION VIII - SPILL OR LEAK PROCEDURES

#### 

# STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

If damaged, return castings to vendor or send to scrap reclaimer.

Collected dust from machining, welding, etc. may be classed as a "hazardous waste" depending on circumstances. Consult local authorities regarding disposal. \_\_\_\_\_\_\_

# SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: Wear a NIOSH approved respirator for dusts or fume if concentrations exceed the TLV or PEL. VENTILATION: Provide general ventilation and/or local exhaust if necessary to maintain concentrations below the TLVs. PROTECTIVE GLOVES: Work gloves advisable for handling castings.

EYE PROTECTION: Safety glasses with side shields and or face shields for particles (grinding). Welding goggles or helmet for welding. OTHER PROTECTIVE EQUIPMENT: Wear a protective apron and gaunt et al

if arc-air gouging or cutting, or welding on castings.

If noise is at or above 90 dBA you should west eas musts or ear N/E means none established

N/E means none established.

N/A means not applicable.

N/D means no data available.

MATERIAL SAFETY DATA SHEET (MSDS)
SC-000-029 REV. 0 DATE 10/15/85 CODE 06-04
CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200 "HAZARD COMMUNICATION" AND TO VARIOUS STATE "EMPLOYEE RIGHT TO KNOW" LAWS

COPYRIGHT 1985 STEEL FOUNDERS SOCIETY OF AMERICA

# SECTION I PRODUCT IDENTIFICATION

This MSDS supplied for:

ASTM No.

ACI alloy designation (Grades)

A217/A217M-84 CA-6N, CA-6NM, CA-15, CA-15a, CA-15M,

CA-28MWV, CA-40

CB7Cu-1, CB7Cu-2, CB-30, CC-50, CD-2,

CD-4MCu, CD-5, CF10SMnN, CPCA15

E3N, HC, HC30, HD, HD50

A297/A297M-84

A351/A351M-84

A352/A352M-84

A356/A356M-84

A426-80

A487/A487M-84

A597/A597M-84

A608-79

A743/A743M-84

A744/A744M-84

A747/A747M-84

A757/A757M-84

MILITARY

MILS-S

16993A

VENDOR NAME AND ADDRESS:

# EMERGENCY PHONE NUMBER:

FIRE HAZARD CLASS: HEALTH: 0 FLAMMABILITY: 0 REACTIVITY: 0 THE FOURTH DIAMOND:

ANSI: WARNING! WELDING, CUTTING, OR GRINDING ON THIS CASTING WILL GENERATE TOXIC DUST OR FUMES.

# SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Carbon Chromium	7440-44-0 7440-47-3	0.06-1.60 11.5-30.0	N/E 0.5 mg/cu.m	N/E 1 mg/cu.m
Chromium(VI)* (certain insoluble for Cobalt Columbium	ms) 7440-48-4	0-3.50	0.05 mg/cu.m 0.1 mg/cu.m	N/E 0.1 mg/cu.m
(same as Niobium)	7440 50 0	0-0.35	N/E	N/E
Copper (As dust) (As fume)	7440-50-8	0-3.25	1.0 mg/cu.m 0.2 mg/cu.m	1.0  mg/cu.m $0.1  mg/cu.m$
Iron (As fume) Manganese (As dust)	7439-89-6 7439-96-5	balance 0.70-9.0	5 mg/cu.m C 5 mg/cu.m	10 mg/cu.m C 5 mg/cu.m
(As fume) Molybdenum	7439-98-7	0-2.25	1 mg/cu.m 10 mg/cu.m	C 5 mg/cu.m 15 mg/cu.m
Nickel Nitrogen	7440-02-0 7727-37-9	0-9.0 0-0.18	1 mg/cu.m N/E	1 mg/cu.m N/E
Phosphorus Silicon	7723-14-0 7440-21-3	0.02-0.060 0.65-4.50	0.1 mg/cu.m 10 mg/cu.m	0.1 mg/cu.m 15 mg/cu.m
Sulfur	7704-34-9	0.02-0.040	(as nuisance N/E	N/E
Tungsten Vanadium	7440-33-7	0-1.25 0-1.00	5 mg/cu.m	N/E
(as vanadium oxide) (As dust) (As fume)	1314-62-1		0.05 mg/cu.m 0.05 mg/cu.m	0.5 mg/cu.m 0.1 mg/cu.m

C means ceiling limit. These are limits which should not be exceeded, even for a short time. All other are 8 hr Time-weighted average concentrations.

Elements having a listed percentage greater than zero will be present in all grades. Those having a value of "0" may not be present in certain grades. Refer to Steel Founders' Society of America "Steel Castings Handbook" Supplement 2 for specifications on a particular ASTM alloy and grade.

\* Water insoluble hexavalent chromium is classified as a human carcinogen by the American Conference of Governmental Industrial Hygienists (ACGIH). Approximately 66% of the total chromium in welding fume is hexavalent, and only 5% of that is insoluble. Overexposure to hexavalent chromium is not likely if general welding fume is controlled. (The alloy and its dust does not contain insoluble hexavalent chromium.)

# SECTION III - OVERVIEW

-----There are no chemical hazards from these castings in solid form at room temperature.

Dust or fumes are generated by machining, grinding, or welding on these castings. Since the castings contain a high percentage of iron, most of the dust or fume will be iron or iron oxide. is no TLV for iron dust, but available information indicates that a concentration of 10 mg/cu.m., as if it were a nuisance dust, will serve as a guideline until a TLV is established.

Overexposure to iron oxide fume over a long time can cause siderosis, sometimes called "iron pigmentation" of the lung. It can be seen on a chest x-ray but causes little or no disability. Also see the Material Safety Data Sheet for the welding rod being used.

Since these castings contain up to 30 percent chromium, and up to 9 percent nickel, airborne contaminants from machining or welding will contain chromium and nickel dust or fume. If total welding fume is adequately controlled, chromium and nickel will also be controlled.

Welding or flame cutting may convert a small fraction of the chromium to the water insoluble hexavalent (carcinogenic) form.

Some forms of nickel have been found to cause cancer in animals. One form, nickel subsulfide, which was present in an old smelting process no longer used, apparently caused nasal cancer in humans. Since then, studies have shown that the potential for ordinary forms of nickel and its oxides to cause cancer in humans is very weak, if it exists at all.

Some grades contain moderate levels of manganese. Long term overexposure to manganese dust or fume can cause manganese poisoning. If welding or flame cutting fume is controlled to the TLV for total fume, the manganese fume will also be controlled.

Grinding on castings that have not been cleaned or that contain embedded sand may generate significant amounts of dust containing free silica, which can cause silicosis.

Carbon, cobalt, copper, niobium, nitrogen, molybdenum, phosphorus, silicon, sulfur, tungsten, and vanadium are also contained in the castings in low amounts. Overexposure to these would not be likely. If airborne concentrations of total dust and fume are controlled to levels below their respective TLVs and PELs, these minor constituents would also be adequately controlled.

# SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Solid, silver gray in color, no odor

BOILING POINT: variable depending on casting grade

VAPOR PRESSURE: N/A
VAPOR DENSITY: N/A
SOLUBILITY IN WATER: N/A

N/A means not applicable. N/E means none established.

N/D means no data available.

SPECIFIC GRAVITY: 7.86 for iron PERCENT VOLATILE BY VOLUME: N/A EVAPORATION RATE: N/A

SECTION V - FIRE AND EXPLOSION DATA

Castings will not burn or explode.

SECTION VI - HEALTH HAZARD DATA

EYES: Metal particles in the eyes may cause irritation if not

SKIN: None known.

BREATHING: Prolonged or repeated overexposure to iron oxide produced in grinding or welding may cause siderosis. Overexposure to manganese dust can cause manganism. Symptoms of manganism are sleepiness, weakness in the legs, emotional disturbances, uncontrollable laughter, and spastic gait. Breathing excessive amounts of silica dust for a long time can cause silicosis. Silicosis causes shortness of breath, reduced capacity to do work, and weakens the defenses against other lung diseases. SWALLOWING: N/A

NOISE: Grinding or machining castings is noisy. The OSHA limit for noise averaged over 8 hours is 90 decibels (dBA), hearing conservation program required if exposure is over 85 dBA. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

IF IN EYES: Metal particles should be removed by trained individuals such as a nurse or physician.

IF ON SKIN: N/A
IF BREATHED: (Fumes from welding): Move to fresh air.

IF SWALLOWED: N/A

SECTION VII - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur.

STABILITY: Stable.

INCOMPATIBILITY: Chromium metal dust may burn or explode when in contact with ammonium nitrate.

SECTION VIII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

If damaged, return castings to vendor or send to scrap reclaimer.

Collected dust from machining, welding, etc. may be classed as a "hazardous waste" depending on circumstances. Consult local authorities regarding disposal.

N/E means none established. N/D means no data available.

SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: Wear a NIOSH approved respirator for dusts or fume if concentrations exceed the TLV or PEL. VENTILATION: Provide general ventilation and/or local exhaust if necessary to maintain concentrations below the TLVs. PROTECTIVE GLOVES: Work gloves advisable for handling castings.

EYE PROTECTION: Safety glasses with side shields and/or face shields for particles (grinding). Welding goggles or helmet for welding. OTHER PROTECTIVE EQUIPMENT: Wear a protective apron and gauntlets if arc-air gouging or cutting, or welding on castings. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: No special precautions.

INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE RELIABLE AND IS ACCURATE AND RELIABLE TO THE BEST OF OUR KNOWLEDGE AND BELIEF BUT IS NOT GUARANTEED TO BE SO.

MATERIAL SAFETY DATA SHEET (MSDS)

SC-000-041 REV. 0 DATE 10/18/85 CODE 14-04

CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200

"HAZARD COMMUNICATION" AND TO VARIOUS STATE

"EMPLOYEE RIGHT TO KNOW" LAWS

COPYRIGHT 1985 AMERICAN FOUNDRYMEN'S SOCIETY

SECTION I PRODUCT IDENTIFICATION

This MSDS supplied for:

ASTM ALLOY DESIGNATION

VENDOR NAME AND ADDRESS:

EMERGENCY PHONE NUMBER:

FIRE HAZARD CLASS: HEALTH: 0 FLAMMABILITY: 0 REACTIVITY: 0

THE FOURTH DIAMOND:

ANSI: CAUTION! WELDING, CUTTING, OR GRINDING ON THIS CASTING

WILL GENERATE TOXIC DUST AND FUMES

SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Carbon Silicon	7440-44-0 7440-21-3		N/E 10 mg/cu.m	N/E 15 mg/cu.m
Manganese	7439-96-5		C5 mg/cu.m as dust 1 mg/cu.m as fume	C5 mg/cu.m as dust
Nickel Chromium Chromium (hexavalent)	7440-02-0 7440-47-3		1 mg/cu.m .5 mg/cu.m .05 mg/cu.m	1 mg/cu.m .1 mg/cu.m N/E
Molybdenum Sulfur Phosphorus Aluminum Titanum	7704-34-9 7723-14-0 7429-90-5	0.01-0.75 0.02-0.18 0.01-0.8 0.01-0.05 0.01-0.06	10 mg/cu.m N/E .1 mg/cu.m 10 mg/cu.m N/E	15 mg/cu.m N/E .1 mg/cu.m N/E N/E

N/E means none established.

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Copper	7440-50-8	0.01-0.90	.2 mg/cu.m as fume 1 mg/cu.m as dust	.l mg/cu.m as fume l mg/cu.m as dust
Iron	7439-89-6	86.3-96.2	5 mg/cu.m as fume	10 mg/cu.m as fume

Water insoluble hexavalent chromium is classified as a human carcinogen by the American Conference of Governmental Industrial Hygienists (ACGIH). Approximately 66% of the total chromium (in welding fume) is hexavalent, and only 5% of that is insoluble. Considering the small amount of chromium in the casting, overexposure to hexavalent chromium is not likely. (There is no hexavalent chromium in the alloy or its dust).

## SECTION III - OVERVIEW

There are no chemical hazards from these castings in solid form.

Dust or fumes generated by machining, grinding, or welding on the casting will put contaminants in the air. Since the casting is over 85% iron, most of the dust or fume will be iron or iron oxide. There is no TLV for iron dust, but available information indicates that a concentration of 10 mg/cu.m., as if it were a nuisance dust, will serve as a guideline until a TLV is established.

High production dry machining of gray iron castings usually requires local exhaust ventilation.

Flame cutting, arc gouging, or welding on the casting generates iron oxide fume. Inhalation of too much iron oxide fume over a long time can cause siderosis, sometimes called "iron pigmentation" of the lung. It can be seen on a chest x-ray but causes little or no disability. Also see the Material Safety Data Sheet for the welding rod being used.

Welding or flame cutting may convert a fraction of the chromium to the water soluble hexavalent (carcinogenic) form, but the chromium content of the casting is so low that over-exposure is not likely.

Nickel has been shown to cause cancer in laboratory animals. However its potential to cause cancer in humans has not been determined. The nickel content of the casting is so low that over-exposure is not likely.

N/E means none established.

Grinding on castings that have not been cleaned or that contain embedded sand will generate significant amounts of dust containing free silica, which can cause silicosis. Good local ventilation is frequently required to prevent over-exposure in this situation. If good ventilation is not available, use a NIOSH-approved dust respirator.

Other toxic metals in the alloy are present in small amounts that will not represent a hazard if iron dust and fume are adequately controlled. 

\_\_\_\_\_\_\_\_

## SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Solid, silver gray in color, no odor

BOILING POINT: 2750 C for iron VAPOR PRESSURE: N/A VAPOR DENSITY: N/A

SOLUBILITY IN WATER: N/A

SPECIFIC GRAVITY: 7.86 for iron PERCENT VOLATILE BY VOLUME: N/A

EVAPORATION RATE: N/A

## SECTION V - FIRE AND EXPLOSION DATA

Castings will not burn or explode.

## SECTION VI - HEALTH HAZARD DATA

EYES: Metal particles in the eyes may cause irritation if not removed.

SKIN: None known.

BREATHING: Prolonged or repeated overexposure to iron oxide produced in grinding or welding may cause siderosis.

SWALLOWING: N/A

NOISE: Grinding or machining castings is noisy. The OSHA limit for noise averaged over 8 hours is 90 decibels (dBA), hearing conservation program required if exposure is over 85 dBA. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

IF IN EYES: Metal particles should be removed by trained individuals such as a nurse or physician.

IF ON SKIN: N/A
IF BREATHED: (Fumes from welding): Move to fresh air.

IF SWALLOWED: N/A

## SECTION VII - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur

STABILITY: Stable.

INCOMPATIBILITY: Iron may cause violent decomposition of hydrogen peroxide (52% by weight or greater).

SECTION VIII - SPILL OR LEAK PROCEDURES

## STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

If damaged, return castings to vendor or send to scrap reclaimer.

Collected dust from machining, welding, etc. may be classed as a "hazardous waste" depending on circumstances. Consult local authorities regarding disposal.

SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

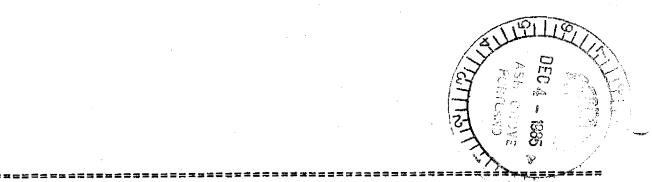
RESPIRATORY PROTECTION: Wear a NIOSH approved respirator for dusts or fume if concentrations exceed the TLV or PEL. VENTILATION: Provide general ventilation and/or local exhaust if necessary to maintain concentrations below the TLVs. PROTECTIVE GLOVES: Work gloves advisable for handling castings. EYE PROTECTION: Safety glasses with side shields and/or face shields for particles (grinding). Welding goggles or helmet for welding.

OTHER PROTECTIVE EQUIPMENT: Wear a protective apron and gauntlets if arc-air gouging or cutting, or welding on castings. If noise is at or above 90 dBA you should wear ear muffs or ear

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: Keep dry to reduce rusting.

THE INFORMATION HEREIN IS BASED ON THE VENDOR'S MSDS WITH ADDITIONS AS NECESSARY TO COMPLY WITH CURRENT REGULATIONS. THE INFORMATION IS BELIEVED TO BE ACCURATE BUT UNDER THE CIRCUMSTANCES IS NOT WARRANTED TO BE.



# PRODUCT NAME

ABRASION RESISTANT CAST IRON Comtra No.SC-000-043

Refer to Material Safety Data Sheet for more information.

# MANUFACTURER

EAGLE FOUNDRY CO. P.O. BOX 250 EAGLE CREEK, OR 97022



## FIRE HAZARD

4. EXTREMELY DANGEROUS FIRE AND EXPLOSION HAZARD

. FIRE AND EXPLOSION HAZARD AT NORMAL TEMP

2. WILL BURN AT TEMPS ABOVE 100 F

1. WILL BURN AT TEMPS ABOVE 200 F

(Blue)

0

O. WILL NOT BURN

HEALTH

## HAZARD

- 4. EXTREME HAZARD AVOID CONTACT OR
  BREATHING VAPOR
  - SEVERE HAZARD USE SPECIAL CLOTHING
    AND MASKS
- 2. HAZARDOUS USE
  MASKS OR SPECIAL
  VENTILATION
- 1. SLIGHTLY HAZARDOUS -IRRITATING
- 0. NORMAL MATERIAL

REACTIVITY

## HAZARD

- EXTREME HAZARD -VACATE AREA IN CASE OF FIRE
- 3. SEVERE EXPLOSION HAZARD
  - VIOLENT CHEMICAL CHANGE POSSIBLE
- 1. UNSTABLE IF HEATED
- 0. NORMALLY STABLE

USE NO POLYMERIZES WATER

(Red)

0

(Yellow)

0

WARNING! WELDING, CUTTING, OR GRINDING ON THIS CASTING WILL GENERATE TOXIC DUST AND FUMES.

## INGREDIENTS .

CARBON
MANGANESE
SILICON
NICKEL
CHROMIUM METAL

MOLYBDENUM COPPER PHOSPHORUS SULFUR IRON

## STORAGE AND HANDLING

2.

NO SPECIAL PRECAUTIONS

MATERIAL SAFETY DATA SHEET (MSDS)

SC-000-043 REV. 0 DATE 10/21/85 CODE 14-04

CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200

"HAZARD COMMUNICATION" AND TO VARIOUS STATE

"EMPLOYEE RIGHT TO KNOW" LAWS

COPYRIGHT 1985 AMERICAN FOUNDRYMEN'S SOCIETY

SECTION I PRODUCT IDENTIFICATION

This MSDS supplied for: ABRASION RESISTANT CAST IRON

## ASTM ALLOY DESIGNATION

## VENDOR NAME AND ADDRESS:

## EMERGENCY PHONE NUMBER:

FIRE HAZARD CLASS: HEALTH: 0 FLAMMABILITY: 0 REACTIVITY: 0

THE FOURTH DIAMOND:

ANSI: WARNING! WELDING, CUTTING, OR GRINDING ON THIS CASTING

WILL GENERATE TOXIC DUST AND FUMES

## SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Carbon Silicon Manganese	7440-44-0 7440-21-3 7439-96-5	0.8-1.5	N/E 10 mg/cu.m C5 mg/cu.m as dust 1 mg/cu.m as	C5 mg/cu.m as dust
Nickel Chromium Chromium (hexavalent)	7440-02-0 7440-47-3	• • • • • • •	1 mg/cu.m .5 mg/cu.m .05 mg/cu.m	1 mg/cu.m .1 mg/cu.m N/E
Molybdenum Sulfur	7439-98-7 7704-34-9		10 mg/cu.m N/E	15 mg/cu.m N/E
Phosphorus Copper	7723-14-0 7440-50-8		.1 mg/cu.m .2 mg/cu.m as fume 1 mg/cu.m as dust	.1 mg/cu.m .1 mg/cu.m as fume 1 mg/cu.m as dust
Iron	7439-89-6	Remainder	5 mg/cu.m as fume	10 mg/cu.m as fume

N/E means none established.

PAGE

2

"C" MEANS CEILING LIMIT- these are limits which should not be exceeded, even for a short time.

Water insoluble hexavalent chromium is classified as a suspect human carcinogen by the American Conference of Governmental Industrial Hygienists (ACGIH).

## SECTION III - OVERVIEW

There are no chemical hazards from these castings in solid form.

\_\_\_\_\_\_

Dust or fumes generated by machining, grinding, or welding on the casting will put contaminants, primarily iron and chromium, in the air. There is no TLV for iron dust, but available information indicates that a concentration of 10 mg/cu.m., as if it were a nuisance dust, will serve as a guideline until a TLV is established.

Overexposure to iron oxide fume over a long time can cause siderosis, sometimes called "iron pigmentation" of the lung. It can be seen on a chest x-ray but causes little or no disability. Also see the Material Safety Data Sheet for the welding rod being used.

Since these castings contain up to 28 percent chromium, airborne contaminants from machining or welding will contain chromium dust or fume. If total welding fume is adequately controlled, chromium will also be controlled.

Welding or flame cutting may convert a small fraction of the chromium to the water insoluble hexavalent (carcinogenic) form. Approximately 66% of the total chromium (in welding fume) is hexavalent, and only 5% of that is insoluble. Chromium may also cause nose and skin irritation. In some sensitive people, an allergic skin reaction may develop. Use good personal hygiene and ventilation to keep concentrations below the TLV.

High production machining, grinding, welding operations, etc, frequently requires local exhaust ventilation. If ventilation is not adequate, wear a NIOSH approved dust and fume respirator.

Grinding on castings that have not been cleaned or that contain embedded sand will generate significant amounts of dust containing free silica, which can cause silicosis. Good local ventilation is frequently required to prevent over-exposure in this situation. If good ventilation is not available, use a NIOSH-approved dust respirator.

Other toxic metals in the alloy are present in small amounts that will not represent a hazard if chromium and iron dust and fume are adequately controlled.

## SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Solid, silver gray in color, no odor

BOILING POINT: 2750 C for iron

VAPOR PRESSURE: N/A
VAPOR DENSITY: N/A
SOLUBILITY IN WATER:

SPECIFIC GRAVITY: 7.86 for iron PERCENT VOLATILE BY VOLUME: N/A

EVAPORATION RATE: N/A

## SECTION V - FIRE AND EXPLOSION DATA

Castings will not burn or explode.

## SECTION VI - HEALTH HAZARD DATA

\_\_\_\_\_\_\_ EYES: Metal particles in the eyes may cause irritation if not removed.

SKIN: Dust or fumes may cause irritation. In some sensitive people, allergic dermatitis may develop.

BREATHING: Prolonged or repeated overexposure to iron oxide produced in grinding or welding may cause siderosis.

Overexposure to chromium fumes may cause nose irritation. Repeated inhalation, especially when combined with inadequate personal hygiene, may result in a perforated nasal septum.

Breathing excessive amounts of silica dust for a long time can cause silicosis. Silicosis causes shortness of breath, reduced capacity to do work, and weakens the defenses against other lung diseases.

NOISE: Grinding castings is noisy. The OSHA limit for noise averaged over 8 hours is 90 decibels (dBA), hearing conservation program required if exposure is over 85 dBA. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

IF IN EYES: Metal particles should be removed by trained individuals such as a nurse or physician.

IF ON SKIN: N/A
IF BREATHED: (Fumes from welding): Move to fresh air.
IF SWALLOWED: N/A

## SECTION VII - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur

STABILITY: Stable.

INCOMPATIBILITY: Iron may cause violent decomposition of hydrogen peroxide (52% by weight or greater). The dust may burn or explode when in contact with ammonium nitrate.

N/E means none established.

SECTION VIII - SPILL OR LEAK PROCEDURES

## STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

If damaged, return castings to vendor or send to scrap reclaimer.

Collected dust from machining, welding, etc. may be classed as a "hazardous waste" depending on circumstances. Consult local authorities regarding disposal.

SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: Wear a NIOSH approved respirator for dusts or fume if concentrations exceed the TLV or PEL.

VENTILATION: Provide general ventilation and/or local exhaust if necessary to maintain concentrations below the TLVs.

PROTECTIVE GLOVES: Work gloves advisable for handling castings.

EYE PROTECTION: Safety glasses with side shields and/or face shields for particles (grinding). Welding goggles or helmet for welding.

OTHER PROTECTIVE EQUIPMENT: Wear a protective apron and gauntlets

if arc-air gouging or cutting, or welding on castings.

If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

COCKTON V CORCIAI DEPONIMIONE OD OWNER COMMENSE

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: Keep dry to reduce rusting.

THE INFORMATION HEREIN IS BASED ON THE VENDOR'S MSDS WITH ADDITIONS AS NECESSARY TO COMPLY WITH CURRENT REGULATIONS. THE INFORMATION IS BELIEVED TO BE ACCURATE BUT UNDER THE CIRCUMSTANCES IS NOT WARRANTED TO BE.

MATERIAL SAFETY DATA SHEET (MSDS) SC-000-037 REV. 0 DATE 10/21/85 CODE 14-04
CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200
"HAZARD COMMUNICATION" AND TO VARIOUS STATE "EMPLOYEE RIGHT TO KNOW" LAWS COPYRIGHT 1985 AMERICAN FOUNDRYMEN'S SOCIETY

SECTION I PRODUCT IDENTIFICATION

This MSDS supplied for:

ASTM ALLOY DESIGNATION

VENDOR NAME AND ADDRESS:

### EMERGENCY PHONE NUMBER:

FIRE HAZARD CLASS: HEALTH: 0 FIRE: 0 REACTIVITY: 0 THE FOURTH DIAMOND:

ANSI: WARNING! WELDING, CUTTING, OR GRINDING ON THIS CASTING

WILL GENERATE TOXIC DUST AND FUMES

## SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Carbon Silicon	7440-44-0 7440-21-3	0.2-2.8	N/E 10 mg/cu.m	N/E 15 mg/cu.m
Manganese	7439-96-5	0.2-15.0	C5 mg/cu.m as dust l as fume	C5 mg/cu.m as dust
Nickel	7440-02-0	0.01-5.5	l mg/cu.m	1 mg/cu.m
Chromium	7440-47-3	0.01-30.0	.5 mg/cu.m	.1 mg/cu.m
Chromium (hexavalent)	\$	the state of the state of	.05 mg/cu.m	N/E
Molybdenum	7439-98-7	0.01-6.50	10 mg/cu.m	15 mg/cu.m
Sulfur	7704-34-9	0.01 - 0.20	N/E	N/E
Phosphorus Aluminum		0.01-0.18 0.01-0.05	.1 mg/cu.m 10 mg/cu.m	.1 mg/cu.m N/E

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Titanum Copper	7440-32-6 7440-50-8	0.01-0.06 0.01-0.90	.2 mg/cu.m as fume 1 mg/cu.m	N/E .l mg/cu.m as fume l mg/cu.m
Iron	7439-89-6	Remainder	as dust 5 mg/cu.m as fume	as dust 10 mg/cu.m as £ume

Water insoluble hexavalent chromium is classified as a suspect human carcinogen by the International Agency for Research on Cancer (IARC).

Nickel has been shown to cause cancer in laboratory animals. However its potential to cause cancer in humans has not been determined.

"C" MEANS CEILING LIMIT- these are limits which should not be exceeded, even for a short time.

# SECTION III - OVERVIEW

There are no chemical hazards from these castings in solid form.

Dust or fumes generated by machining, grinding, or welding on the casting will put contaminants, primarily iron and chromium, in the air. There is no TLV for iron dust, but available information indicates that a concentration of 10 mg/cu.m., as if it were a nuisance dust, will serve as a guideline until a TLV is established.

Overexposure to iron oxide fume over a long time can cause siderosis, sometimes called "iron pigmentation" of the lung. It can be seen on a chest x-ray but causes little or no disability. Also see the Material Safety Data Sheet for the welding rod being used.

Since these castings contain up to 28 percent chromium, airborne contaminants from machining or welding will contain chromium dust or fume. If total welding fume is adequately controlled, chromium will also be controlled.

Welding or flame cutting may convert a small fraction of the chromium to the water insoluble hexavalent (carcinogenic) form. Approximately 66% of the total chromium (in welding fume) is hexavalent, and only 5% of that is insoluble. Chromium may also cause nose and skin irritation. In some sensitive people, an allergic skin reaction may develop. Use good personal hygiene and ventilation to keep concentrations below the TLV.

Some grades contain moderate levels of manganese. Gong term overexposure to manganese dust or fume can cause manganese poisoning. If welding or flame cutting fume is controlled to the TLV for total fume, the manganese fume will also be controlled.

High production machining, grinding, welding operations, etc, usually should be done with local exhaust ventilation. If ventilation is not adequate, wear a NIOSH approved dust and fume respirator.

Grinding on castings that have not been cleaned or that contain embedded sand will generate significant amounts of dust containing free silica, which can cause silicosis. Good local ventilation is frequently required to prevent over-exposure in this situation. If good ventilation is not available, use a NIOSH-approved dust respirator.

Other toxic metals in the alloy are present in small amounts that will not represent a hazard if chromium and iron dust and fume are adequately controlled.

## SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Solid, silver gray in color, no odor BOILING POINT: 2750 C for iron VAPOR PRESSURE: N/A VAPOR DENSITY: N/A

SOLUBILITY IN WATER: N/A

SPECIFIC GRAVITY: 7.86 for iron PERCENT VOLATILE BY VOLUME: N/A

EVAPORATION RATE: N/A

## SECTION V - FIRE AND EXPLOSION DATA

Castings will not burn or explode.

## SECTION VI - HEALTH HAZARD DATA

\_\_\_\_\_\_ EYES: Metal particles in the eyes may cause irritation if not removed.

SKIN: Dust or fumes may cause irritation. In some sensitive people, allergic dermatitis may develop.

BREATHING: Prolonged or repeated overexposure to iron oxide produced in grinding or welding may cause siderosis.

Overexposure to chromium fumes may cause nose irritation. Repeated inhalation, especially when combined with inadequate personal hygiene, may result in a perforated nasal septum.

Overexposure to manganese dust can cause manganism. Symptoms of manganism are sleepiness, weakness in the legs, emotional disturbances, uncontrollable laughter, and spastic gait.

Breathing excessive amounts of silica dust for a long time can cause silicosis. Silicosis causes shortness of breath, reduced capacity to do work, and weakens the defenses against other lung diseases.

Grinding castings is noisy. The OSHA limit for noise averaged over 8 hours is 90 decibels (dBA), hearing conservation program required if exposure is over 85 dBA. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

PAGE

IF IN EYES: Metal particles should be removed by trained individuals such as a nurse or physician.

IF ON SKIN: N/A
IF BREATHED: (Fumes from welding): Move to fresh air.

IF SWALLOWED: N/A

### SECTION VII - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur

STABILITY: Stable.

INCOMPATIBILITY: Iron may cause violent decomposition of hydrogen peroxide (52% by weight or greater). The dust may burn or explode when in contact with ammonium nitrate.

SECTION VIII - SPILL OR LEAK PROCEDURES

## STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

If damaged, return castings to vendor or send to scrap reclaimer.

Collected dust from machining, welding, etc. may be classed as a "hazardous waste" depending on circumstances. Consult local authorities regarding disposal.

## SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: Wear a NIOSH approved respirator for dusts or fume if concentrations exceed the TLV or PEL. VENTILATION: Provide general ventilation and/or local exhaust if necessary to maintain concentrations below the TLVs. PROTECTIVE GLOVES: Work gloves advisable for handling castings. EYE PROTECTION: Safety glasses with side shields and/or face shields for particles (grinding). Welding goggles or helmet for welding.

OTHER PROTECTIVE EQUIPMENT: Wear a protective apron and gauntlets if arc-air gouging or cutting, or welding on castings. If noise is at or above 90 dBA you should wear ear muffs or ear

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: Keep dry to reduce rusting.

THE INFORMATION HEREIN IS BASED ON THE VENDOR'S MSDS WITH ADDITIONS AS NECESSARY TO COMPLY WITH CURRENT REGULATIONS. THE INFORMATION IS BELIEVED TO BE ACCURATE BUT UNDER THE CIRCUMSTANCES IS NOT WARRANTED TO BE.

N/A means not applicable. N/E means none established. M/D morne no data available

MATERIAL SAFETY DATA SHEET (MSDS)

SC-000-039 REV. 0 DATE 10/21/85 CODE 14-04

CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200

"HAZARD COMMUNICATION" AND TO VARIOUS STATE

"EMPLOYEE RIGHT TO KNOW" LAWS

COPYRIGHT 1985 AMERICAN FOUNDRYMEN'S SOCIETY

SECTION I PRODUCT IDENTIFICATION

This MSDS supplied for:

## ASTM ALLOY DESIGNATION

VENDOR NAME AND ADDRESS:

## EMERGENCY PHONE NUMBER:

FIRE HAZARD CLASS: HEALTH: 0 FLAMMABILITY: 0 REACTIVITY: 0

THE FOURTH DIAMOND:

ANSI: CAUTION! WELDING, CUTTING, OR GRINDING ON THIS CASTING

WILL GENERATE TOXIC DUST AND FUMES

SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Carbon	7440-44-0	2.4-3.0	N/E	N/E
Silicon	7440-21-3	1.0-6.0	10 mg/cu.m	15 mg/cu.m
Manganese	7439-96-5	0.7-2.4	C5 mg/cu.m as dust l mg/cu.m as	C5 mg/cu.m as dust fume
22.1.41	7440 00 0	10 0 26 0	- 1	
Nickel		18.0-36.0	1 mg/cu.m	l mg/cu.m
Chromium Chromium (hexavalent)	7440-47-3	0.1-5.5	.5 mg/cu.m .05 mg/cu.m	.1 mg/cu.m N/E
Molybdenum	7439-98-7	0.7 ~1.0	10 mg/cu.m	15 mg/cu.m
Phosphorus	7723-14-0	<0.08	.1 mg/cu.m	.1 mg/cu.m
Iron	7439-89-6	46.0-77.1	5 mg/cu.m as fume	10 mg/cu.m as fume

Water insoluble hexavalent chromium is classified as a human carcinogen by the International Agency for Research on Cancer (IARC). Nickel has been shown to cause cancer in laboratory animals. However its potential to cause cancer in humans has not been determined.

## SECTION III - OVERVIEW

Austenitic Ductile Irons contain large percentages of nickel. There are usually no chemical hazards from these castings in solid form at room temperature. However, nickel can cause an allergic skin reaction in some sensitized individuals after repeated or prolonged contact.

Machining, grinding, flame cutting, or welding on the casting will create air contaminants, primarily nickel and iron.

Breathing high concentrations of nickel dust for short time periods can cause irritation of the nose and throat. Nickel has been found to cause cancer in animals. One form, nickel subsulfide, which was present in an old smelting process no longer used, apparently caused nasal cancer in humans. Since then, studies have shown that the potential for ordinary forms of nickel and its oxides to cause cancer in humans is very weak.

There is no TLV for iron dust, but available information indicates that the TLV of a nuisance dust will serve as a guideline until a TLV is established. Flame cutting, arc gouging, or welding on the casting generates nickel oxide and iron oxide fume. Inhalation of too much iron oxide fume over a long time can cause siderosis, sometimes called "iron pigmentation" of the lung. It can be seen on a chest x-ray but causes little or no disability. Also see the Material Safety Data Sheet for the welding rod being used.

Water insoluble hexavalent chromium is classified as a human carcinogen by the American Conference of Governmental Industrial Hygienists (ACGIH). Approximately 66% of the total chromium (in welding fume) is hexavalent, and only 5% of that is insoluble. Considering the small amount of chromium in the casting, overexposure to hexavalent chromium is not likely. (There is no hexavalent chromium in the alloy or its dust).

Because of the potential hazard from metal dust and fumes, grinding, welding operations, etc, should be done under local exhaust ventilation. If ventilation is not adequate, wear a NIOSH approved dust respirator for grinding and a NIOSH approved fume respirator for welding.

Grinding on castings that have not been cleaned or that contain embedded sand may generate significant amounts of dust containing free silica, which can cause silicosis.

Other toxic metals in the alloy are present in small amounts that will not represent a hazard if nickel and iron dust and fume are adequately controlled.

## SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Solid, silver gray in color, no odor

BOILING POINT: 2750 C for iron VAPOR PRESSURE: N/A

VAPOR DENSITY: N/A

SOLUBILITY IN WATER: N/A

SPECIFIC GRAVITY: 7.86 for iron PERCENT VOLATILE BY VOLUME: N/A

EVAPORATION RATE: N/A

## SECTION V - FIRE AND EXPLOSION DATA

Castings will not burn or explode.

## SECTION VI - HEALTH HAZARD DATA

EYES: Metal particles in the eyes may cause irritation if not removed.

SKIN: None known.

BREATHING: Prolonged or repeated overexposure to iron oxide produced in grinding or welding may cause siderosis. Breathing high concentrations of nickel fume may cause asthma, pulmonary edema, or pumonary fibrosis. Some forms of these metals can cause cancer; refer to the Overview of this MSDS.

SWALLOWING: N/A

Grinding on castings is noisy. The OSHA limit for noise averaged over 8 hours is 90 decibels (dBA), hearing conservation program required if exposure is over 85 dBA. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

IF IN EYES: Metal particles should be removed by trained individuals such as a nurse or physician.

IF ON SKIN: N/A
IF BREATHED: (Fumes from welding): Move to fresh air.
IF SWALLOWED: N/A

#### SECTION VII - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur

STABILITY: Stable.

INCOMPATIBILITY: Iron may cause violent decomposition of hydrogen peroxide (52% by weight or greater).

plugs.

## SECTION VIII - SPILL OR LEAK PROCEDURES

## STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

If damaged, return castings to vendor or send to scrap reclaimer.

Collected dust from machining, welding, etc. may be classed as a "hazardous waste" depending on circumstances. Consult local authorities regarding disposal.

SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: Wear a NIOSH approved respirator for dusts or fume if concentrations exceed the TLV or PEL.

VENTILATION: Provide general ventilation and/or local exhaust if necessary to maintain concentrations below the TLVs.

PROTECTIVE GLOVES: Work gloves advisable for handling castings.

EYE PROTECTION: Safety glasses with side shields and/or face shields for particles (grinding). Welding goggles or helmet for welding.

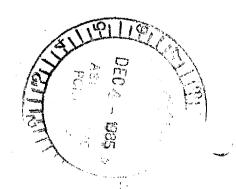
OTHER PROTECTIVE EQUIPMENT: Wear a protective apron and gauntlets if arc-air gouging or cutting, or welding on castings.

If noise is at or above 90 dBA you should wear ear muffs or ear

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: Keep dry to reduce rusting.

THE INFORMATION HEREIN IS BASED ON THE VENDOR'S MSDS WITH ADDITIONS AS NECESSARY TO COMPLY WITH CURRENT REGULATIONS. THE INFORMATION IS BELIEVED TO BE ACCURATE BUT UNDER THE CIRCUMSTANCES IS NOT WARRANTED TO BE.



N/E means none established.

N/A means not applicable.

N/D means no data available.

MATERIAL SAFETY DATA SHEET (MSDS)

SC-000-042 REV. 0 DATE 10/21/85 CODE 14-04

CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200

"HAZARD COMMUNICATION" AND TO VARIOUS STATE

"EMPLOYEE RIGHT TO KNOW" LAWS

COPYRIGHT 1985 AMERICAN FOUNDRYMEN'S SOCIETY

SECTION I PRODUCT IDENTIFICATION

This MSDS supplied for:

## ASTM ALLOY DESIGNATION

VENDOR NAME AND ADDRESS:

## EMERGENCY PHONE NUMBER:

FIRE HAZARD CLASS: HEALTH: 0 FLAMMABILITY: 0 REACTIVITY: 0
THE FOURTH DIAMOND:

ANSI: CAUTION! WELDING, CUTTING, OR GRINDING ON THIS CASTING WILL GENERATE TOXIC DUST AND FUMES

SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Carbon	7440-44-0	3.0-4.3	N/E	N/E
Silicon	7440-21-3		10 mg/cu.m	15 mg/cu.m
Manganese	7439-96-5	<1.2	C5 mg/cu.m as dust l as fume	C5 mg/cu.m as dust
Nickel	7440-02-0	0.01-1.5	1 mg/cu.m	1 mg/cu.m
Chromium Chromium (hexavalent)	7440-47-3	0.02-0.13	.5 mg/cu.m .05 mg/cu.m	.1 mg/cu.m N/E
Molybdenum	7439-98-7	0.01-0.75	10 mg/cu.m	15 mg/cu.m
Sulfur	7704-34-9	0.02	N/E	N/E;
Phosphorus	7723-14-0	<0.05	.1 mg/cu.m	.1 mg/cu.m
Aluminum	7429-90-5	0.003-0.06	10 mg/cu.m	N/E

N/E means none established.

INGREDIENT	CAS NO. PERCENT	TLV PEL	
Copper	7440-50-8 0.01-0.90	.2 mg/cu.m as fume 1 mg/cu.m as dust	.l mg/cu.m as fume l mg/cu.m as dust
Iron	7439-89-6 87.7-95.1	5 mg/cu.m as fume	10 mg/cu.m as fume
Cerium	7440-45-1 <0.3	N/E	N/E
Mag nesi um	7439-95-4 0.02-0.1	10 mg/cu.m as oxide fume	15 mg/cu.m as oxide fume

Water insoluble hexavalent chromium is classified as a human carcinogen by the American Conference of Governmental Industrial Hygienists (ACGIH). Approximately 66% of the total chromium (in welding fume) is hexavalent, and only 5% of that is insoluble. Considering the small amount of chromium in the casting, overexposure to hexavalent chromium is not likely. (There is no hexavalent chromium in the alloy or its dust).

## SECTION III - OVERVIEW

There are no chemical hazards from these castings in solid form.

Dust or fumes generated by machining, grinding, or welding on the casting will put contaminants in the air. Since the casting is over 85% iron, most of the dust or fume will be iron or iron oxide. There is no TLV for iron dust, but available information indicates that the TLV for nuisance dust will serve as a guideline until a TLV is established.

High production dry machining of ductile iron castings usually requires local exhaust ventilation.

Flame cutting, arc gouging, or welding on the casting generates iron oxide fume. Inhalation of too much iron oxide fume over a long time can cause siderosis, sometimes called "iron pigmentation" of the lung. It can be seen on a chest x-ray but causes little or no disability. Also see the Material Safety Data Sheet for the welding rod being used.

Welding or flame cutting may convert a fraction of the chromium to the water soluble hexavalent (carcinogenic) form, but the chromium content of the casting is so low that over-exposure is not likely

Nickel has been shown to cause cancer in laboratory animals. However its potential to cause cancer in humans has not been determined. The nickel content of the casting is so low that over-exposure is not likely.

3

Grinding on castings that have not been cleaned or that contain embedded silica will generate significant amounts of dust containing free silica, which can cause silicosis. Good local ventilation is frequently required to prevent over-exposure in this situation. If good ventilation is not available, use a NIOSH-approved dust respirator.

Other toxic metals in the alloy are present in small amounts that will not represent a hazard if copper dust and fume are adequately

## SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Solid, silver gray in color, no odor BOILING POINT: 2750 C for iron VAPOR PRESSURE: N/A VAPOR DENSITY: N/A

SOLUBILITY IN WATER: N/A

SPECIFIC GRAVITY: 7.86 for iron PERCENT VOLATILE BY VOLUME: N/A

EVAPORATION RATE: N/A

## SECTION V - FIRE AND EXPLOSION DATA

Castings will not burn or explode.

## SECTION VI - HEALTH HAZARD DATA

\_\_\_\_\_\_\_\_\_\_ EYES: Metal particles in the eyes may cause irritation if not removed.

\_\_\_\_\_\_

SKIN: None known.

BREATHING: Prolonged or repeated overexposure to iron oxide produced in grinding or welding may cause siderosis. SWALLOWING: N/A

NOISE: Grinding or machining castings is noisy. The OSHA limit for noise averaged over 8 hours is 90 decibels (dBA), hearing conservation program required if exposure is over 85 dBA. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

IF IN EYES: Metal particles should be removed by trained individuals such as a nurse or physician.

IF ON SKIN: N/A
IF BREATHED: (Fumes from welding): Move to fresh air.

IF SWALLOWED: N/A

## SECTION VII - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur

STABILITY: Stable.

INCOMPATIBILITY: Iron may cause violent decomposition of hydrogen peroxide (52% by weight or greater).

N/E means none established.

## SECTION VIII - SPILL OR LEAK PROCEDURES

## STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

If damaged, return castings to vendor or send to scrap reclaimer.

Collected dust from machining, welding, etc. may be classed as a "hazardous waste" depending on circumstances. Consult local authorities regarding disposal.

## SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: Wear a NIOSH approved respirator for dusts or fume if concentrations exceed the TLV or PEL.

VENTILATION: Provide general ventilation and/or local exhaust if necessary to maintain concentrations below the TLVs.

PROTECTIVE GLOVES: Work gloves advisable for handling castings.

EYE PROTECTION: Safety glasses with side shields and/or face shields for particles (grinding). Welding goggles or helmet for welding.

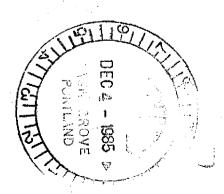
OTHER PROTECTIVE EQUIPMENT: Wear a protective apron and gauntlets if arc-air gouging or cutting, or welding on castings.

If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: Keep dry to reduce rusting.

THE INFORMATION HEREIN IS BASED ON THE VENDOR'S MSDS WITH ADDITIONS AS NECESSARY TO COMPLY WITH CURRENT REGULATIONS. THE INFORMATION IS BELIEVED TO BE ACCURATE BUT UNDER THE CIRCUMSTANCES IS NOT WARRANTED TO BE.



Dear Customer: This Bulletin contains important environmental, health and toxicology information for your employees who recently ordered this product. Please make sure this information is given to them. If you resell this product, this Bulletin should be given to the Buyer. This Form may be reproduced without permission.

Chevron U.S.A. Inc.

RECEIVED

APR 1 1986



Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200). (Formerly Called MATERIAL INFORMATION BULLETIN)



CHEVROM NL Gear Compound 320

CPS 255055

### TYPICAL COMPOSITION

Highly refined base oils (CAS 64742-57-0, 64742-54-7, 64742-65-0 and 64742-01-4)

>97%

Additives including foam inhibitor, pour depressant and antiwear gear compounds

<31

#### EXPOSURE STANDARD

No Federal OSHA exposure standard or ACGIH TLV has been established for this material. Based on information reviewed to date, we recommend an exposure standard of 5  $mg/m^3$ . This is the Federal OSHA exposure standard and the ACGIH (1984-85) TLV for mineral oil mists.

### PHYSIOLOGICAL & HEALTH EFFECTS

### EMERGENCY & FIRST AID PROCEDURES

## Eyes

Expected to cause no more than minor eye irritation.

Flush eyes immediately with fresh water for at least 15 minutes while holding the eyelids open. If irritation persists, see a doctor.

## Skin

Expected to cause no more than minor skin irritation following prolonged or frequently repeated contact.

Wash skin thoroughly with soap and water. Launder contaminated clothing.

## Inhalation

Not expected to be acutely toxic by inhalation. Breathing mineral oil mist at concentrations in air that exceed the recommended exposure standard can cause respiratory irritation or discomfort. See Additional Health Data.

If respiratory discomfort or irritation occurs, move the person to fresh air. See a doctor if discomfort or irritation continues.

#### Ingestion

bv

Not expected to be acutely toxic ingestion.

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

X-IRCD21 407-85

No. 390

Signs and symptoms of respiratory tract.rritation may include, but may not be imited to, one or more of the following, repending on concentration and length of exposure: nasal discharge, nosebleed, sore throat, coughing, bronchitis, pulmonary edema and difficulty in breathing.

This product contains base oils which the International Agency for Research on Cancer (IARC) classifies as having no evidence of carcinogenic potential.

#### SPECIAL PROTECTIVE INFORMATION

Eye Protection: No special eye protection is necessary.

**Skin Protection:** No special skin protection is necessary.

Respiratory Protection: No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standard, the use of an approved respirator is recommended.

Ventilation: Use adequate ventilation to keep the airborne concentrations of this aterial below the recommended exposure standard.

## FIRE PROTECTION

Flash Point: (COC)>205°C(>401°F)

Autoignition Temp.: NDA Flammability Limits: n/a

Extinguishing Media: CO2, Dry Chemical,

Foam, Water Fog.

Special Fire Fighting Procedures: For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus. See Hazardous Decomposition Products. Read the entire MSDS.

## SPECIAL PRECAUTIONS

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently.

CAUTION! Do not use pressure to empty drum or explosion may result.

Environmental Impact: This material is not expected to present any environmental problems other than those associated with oil spills.

Precautions if Material is Released or Spilled: Stop the source of the leak or release. Clean up releases as soon as Contain liquid to possible. prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. appropriate, remove feasible and contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

Waste Disposal Methods: Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

### REACTIVITY DATA

Stability (Thermal, Light, etc.): Stable. Incompatibility (Materials to Avoid): May react with strong oxidizing materials. Hazardous Decomposition Products: Normal combustion forms carbon dioxide and water vapor and may produce oxides of sulfur, phosphorus and nitrogen; incomplete combustion can produce carbon monoxide. Hazardous Polymerization: Will not occur.

#### PHYSICAL PROPERTIES

Solubility: Soluble in hydrocarbon solvents; insoluble in water.

Appearance (Color, Odor, etc.): Dark green viscous liquid.

Boiling Point: n/a

Melting Point: n/a

Specific Gravity: 0.90 @ 15.6/15.6°C

Vapor Pressure: n/a

Vapor Density (Air=1): n/a

Percent Volatile (Volume %): n/a

Evaporation: n/a

Viscosity: 304 cSt @ 40°C

n/a = Not Applicable
NDA = No Data Available

The above information is based on data of which we are aware and is believed to be correct as of the date hereof. Since the information contained herein may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon the condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.



## NORTH AMERICAN REFRACTORIES PRODUCT SAFETY DATA SHEET

**MANUFACTURER** 

MSDS # 3044-00

NORTH AMERICAN REFRACTORIES

Vendor:

Emergency Phone Number East (814) 236-3890 Uest (415) 432-4741

Date Issued: 10/24/85 Date Revised: 10/14/85

Product Type: Refractory Castable / Gun Material

Trade Name: R-374 CASTABLE

\*\*\*\*\*\*\*\*\*\*\*\* SECTION I - PRODUCT IDENTIFICATION \*\*\*\*\*\*\*\*\*

Chemical Name: Fireclay Castable/ Chemical Family: A1203, Si02, Ca0

\*\*\*\*\*\*\* SECTION II - CHEMICAL COMPOSITION

Hazardous Ingredients: CAS Number: PCT:

Crystalline Silica N/A less than 25%

Other Ingredients: CAS Number: PCT:

Alumina Silicate 66402-68-4 less than 75% Hydrous Alumina Silicate 1332-58-7 less than 10% Hydraulic Setting Cement 12005-57-1 less than 35%

\*\*\*\*\*\*\*\*\*\* SECTION III - PHYSICAL DATA \*\*\*\*\*\*\*\*\*\*\*

Appearance and Odor: Tan, granular, dry mixture, odorless

\*\*\*\*\*\*\* SECTION IV - FIRE AND EXPLOSION HAZARD \*\*\*\*\*\*\*\*\*\*

Flammability: This product is non-flammable and will not support combustion.

SECTION V - HEALTH HAZARD

Threshold Limit Value: For respirable dust: 10 divided by (%Qtz. + 2)

expressed as mg/m3

Effects of Overexposure: Cement may cause irritation to skin and eyes.

\*\*\*\*\*\*\*\*\*\*\*

Chronic exposure to dust could contribute to silicosis.

Emergency and First Aid Data:

Eyes: Flush with water and get medical help. Eyes: Flush with water for 15 minutes and get

medical help.

\*\*\*\*\*\*\*\*\*\*\* SECTION VI - REACTIVITY DATA

Stability and Reactivity: This product is stable and non-reactive.

Steps to be Taken in Case of a Spill:

Avoid generating dust exposure during cleanup.

Waste Disposal Method: Dispose of material according to local, state or

federal regulations and as final used condition of

the product dictates.

\*\*\*\*\*\*\*\*\*\*\*\* SECTION VIII - INDUSTRIAL HYGIENE INFORMATION \*\*\*\*\*\*

Ventilation: Local exhaust recommended to maintain exposures

below TLV.

Respiratory Protection: Approved dust type for exposures above TLV.

Protective Gloves: Impervious gloves recommended.

Eye Protection: Recommended

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION IX - SPECIAL PRECAUTIONS

Special Precautions: Avoid dust generation.

Precautionary Labeling: Product contains crystalline silica and

hydraulic setting cement

WARNING: Prolonged inhalation of product

dust may cause delayed lung injury (silicosis) Contact may cause irritation to eyes and skin.

\*\*\*\*\*\*\*\*\*\*\*\*



# NORTH AMERICAN REFRACTORIES PRODUCT SAFETY DATA SHEET

MANUFACTURER

MSDS # 1031-00

NORTH AMERICAN REFRACTORIES

Vendor:

Emergency Phone Number East (814) 236-3890 West (415) 432-4741

\*\*\*\*\*\*\*\*\*

\*\*\*\*\*\*\*

Date Issued: 10/24/85 Date Revised: 09/23/85

Product Type: Refractory Brick Shape - Alumina Silica

Trade Name: ULTRABOND 858

Chemical Name: High Alumina Brick/

Chemical Family: A1203, SiO2

\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION II - CHEMICAL COMPOSITION \*\*\*\*\*\*\*\*\*\*\*

Hazardous Ingredients: CAS Number: PCT:

Crystalline Silica N/A less than 1%

Other Ingredients: CAS Number: PCT:

Alumina 1344-28-1 less than 10% Alumina Silicate 66402-68-4 more than 89%

SECTION III - PHYSICAL DATA

Alumina Silicate 66402-68-4 more than 89%

Appearance and Odor: Gray to white, brick shapes, odorless

Flammability: This product is non-flammable and will not support

combustion.

Threshold Limit Value: For respirable dust: 10 divided by (%Qtz. + 2)

SECTION V - HEALTH HAZARD

expressed as mg/m3

Effects of Overexposure: Chronic exposure to dust could contribute to

silicosis.

\*\*\*\*\*\*\*\*\*\*\*\*

Stability and Reactivity: This product is stable and non-reactive.

\*\*\*\*\*\*\* SECTION VII - SPILL AND LEAK PROCEDURES \*\*\*\*\*\*\*\*\*\*\*\*

Steps to be Taken in Case of a Spill:

Avoid generating dust exposure during cleanup.

Waste Disposal Method: Dispose of material according to local, state or federal regulations and as final used condition of

the product dictates.

\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION VIII - INDUSTRIAL HYGIENE INFORMATION \*\*\*\*\*

Ventilation: Local exhaust recommended to maintain exposures

below TLV.

Respiratory Protection: Approved dust type for exposures above TLV.

Eye Protection: Recommended

\*\*\*\*\*\*\*\*\*\*\*\* SECTION IX - SPECIAL PRECAUTIONS

\*\*\*\*\*\*

Special Precautions: Avoid dust generation.

Precautionary Labeling: Product contains crystalline silica

WARNING: Prolonged/repeated inhalation of product dust may cause delayed lung injury (silicosis)

7.



## MATERIAL SAFETY DATA SHEET

(Approved by U.S. Department of Labor "Essentially Similar" to Form LSB-00S-4)

PRODUCT NAME: SOLVENT SEN 250 B Rev. 10/24/85 PAGE 1

CHEMICAL NAME: N/A Solvent CHEMICAL FAMILY:

Proprietary MOLECULAR WEIGHT: 142 FORMULA:

None SYNONYMS:

## I. PHYSICAL DATA

BOILING POINT, 760 mm, Hg	314-387°F	FREEZING POINT	Un known
SPECIFIC GRAVITY (H <sub>2</sub> O = 1)	0.790 @ 20°C	VAPOR PRESSURE AT 20°C	5 mm Hg
VAPOR DENSITY (air = 1)	4.9	SOLUBILITY IN WATER, % by wt.	S1 ight
PER CENT VOLATILES BY VOLUME	100%	EVAPORATION RATE (Butyl Acetate = 1)	0.13

## II. HAZARDOUS INGREDIENTS

MATERIAL	%	TLV (Units)
Paraffin Hydrocarbon (CAS #8002-74-2)		150 ppm

# III. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT [test method(s)]	1050	FITCC			AUTOIGNITION TEMPERATURE	490 °F
FLAMMABLE LIMITS IN AIR, % by volume		LOWER	1.0%	UPPE	6.0%	
EXTINGUISHING MEDIA	ì	Carbon dioxide, fo	oam, dry che	emical, v	water spray.	
SPECIAL FIRE FI PROCEDURES	IGHTING	Self-contained bre	eathing appa	iratus fo	or confined spa	ces.
UNUSUAL FIRE A		Vapor is highly f	lammable and	d may aco	cumulate in con	fined spaces.

## **EMERGENCY PHONE NUMBER**

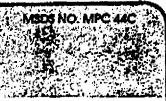
1-800-424-9300 CHEMTREC

While Great Western Chemical Co. believes that the data contained herein are factual and the opinions expressed are those of qualified experts regarding th results of the tests conducted, the data are not to be taken as a warranty or representation for which Great Western Chemical Co. assumes legal responsibility. They are offered solely for your consideration, investigation, and verification. Any use of these data and information must be determined by the user to be accordance with applicable Federal, State, and local laws and regulations.

IV.	HEAL	_TH	HAZARD	DATA
-----	------	-----	--------	------

		IV. HE	ALTH HAZARD DAT	А			
THRESHOLD LIMIT VALUE		125 ppm for 8-hour exposure (suggested).					
EFRECTS OF OVEREXPOSURE		Irritation to skin, eyes, and mucous membranes; nausea, dizziness upon inhalation; harmful or fatal if swallowed.					
EMERGENCY AND FIRST AID PROCEDURES		EYES: Flush with water for 15 minutes. Seek medical attention if irritation persists. SKIN: Wash with soap and water. Remove and launder contaminated clothing. INGESTION: DO NOT INDUCE VOMITING. Seek medical attention. INHALATION: Move to fresh air. Perform artifical respiration if necessary.					
	'	V.	REACTIVITY DATA				
STAB UNSTABLE	STABLE X	CONDITIONS TO AVOID Extreme heat, sources of ignition.					
INCOMPATIBILITY (materials to avoid)		Strong oxidizing materials.					
HAZARDOUS DECOMPOSITION PRODUCTS		Carbon dioxide, carbon monoxide.					
	OLYMERIZATION Will not Occur X	CONDITIONS TO AVOID	None.				
	j l	M. CDU I		LIDEO			
STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED		VI. SPILL OR LEAK PROCEDURES  Contain spill and prevent from entering sewer.  Extinguish all sources of ignition. Absorb and recontainerize.					
WASTE DISPOSAL METHOD		Dispose of absorbent in a licensed hazardous waste landfill.					
	VI	ı I. SPECIAL	PROTECTION INFO	RMATION			
RESPIRATORY PROTECTION (specify type)		Organic vapor cartridge on respirator.					
VENTILATION	LOCAL EXHAUST			SPECIAL			
	MECHANICAL (general)	Preferred		OTHER			
PROTECTIVE GLOVES		Rubber or synthetic		EYE PROTECTION	Goggles		
		Apron, boots, eyewash, safety shower					
	ECTIVE	Apron, boot	ts, eyewash, safety sho	wer			
	ECTIVE	1	es, eyewash, safety sho				
OTHER PROTE EQUIPMENT	ARY LABELING	VIII. S  Keep out of Flammable. Do not use		NS For industria les when hand ion.			





# MATERIAL SAFETY DATA SHEET

## SECTION I - PRODUCT IDENTIFICATION

Product Type:

Coated high alloy electrodes for shielded metal arc welding

Product Name:

Stoody 19, 21, 31, 33, 35, 2134, Coaled Tube Stoodite,

Stoodite XHC, 5-7159

Specification:

No AWS specification

Manufacturer:

Stoody Company

Address:

16425 Gale Ave., Industry, CA 91749

Telephone No:

(818) 968-0717

Date Prepared:

October 30, 1985

## SECTION II - HAZARDOUS INGREDIENTS

IMPORTANT! This section covers the materials from which these products are manufactured. The furnes and gases produced when welding with normal use of these products are covered in Section V.

Hazardous Components	CAS No.	O\$HA PEL mg/m³	ACGIH TLV mg/m³	Carcinogenicity	Wt. %
Manganese	7439-96-5	5 CLG	5 CLG	0	0-5
Silicon	7440-21-3	None	. 5	0	0-5
Chromium	7440-47-3	1	.5	Positive	10-30
Niçk <del>el</del>	7440-02-0	1	4.	Positive	0-1
Molybdenum	7439-98-7	15	-10	0	0-3
tron	7439-89-6	5	5	0	45-80
Titanium Dioxide	13463-67-7	15	10 20 STEL	0	0-5
Fluoride	7789-75-5	2.5	2.5 as F	0	0-1
Calcium Carbonate	1317-65-3	None	10	0	0-4
Graphile	77 <b>82-4</b> 2-5	None	15 mppcf	0	0-3

CLG: Celling Limit; STEL: Short Term Exposure Limit

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

Not applicable.



## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

(Nonflammable) Welding arc and sparks can Ignite combustibles and flammables. Refer to American National Standard 249.1, for fire prevention during the use of welding and allied procedures.

## SECTION V - REACTIVITY DATA

## **Hazardous Decomposition Products**

Exposure limit: Welding tumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedure and electrodes used. Other conditions which also influence the composition and quantity of the furnes and gases to which workers may be exposed include: coalings on the metal being welded (such as paint, plating, or galvanizing), the number of welders and the volume of work area, the quality and amount of ventilation, the position of the welder's head with respect to the furne plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities).

When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section II. Fume and gas decomposition products, and not the ingredients in the electrode, are important. The concentration of a given tume or gas component may decrease or increase by many times the original concentration in the electrode. Also, new compounds not in the electrodes may form. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the materials shown in Section II, plus those from the base metal and coating, etc., as noted above.

Reasonably expected furne constituents of these products would include: primarily fluorides and complex oxides of Iron and silicon; secondarily complex oxides of chromium, manganese, nickel, molybdenum, titanium, calcium, sodium and potassium.

The present OSHA PEL for hexavalent chromium (CR+4) is 0.05 mg/m³ which will result in a significant reduction from the 5 mg/m³ general welding furne (NOC) level. The limit of 0.05 mg/m³ for hexavalent chromium in these electrodes comes from the limit sharm in 80HA Table 2.9, which is to 0.1 mg of 0.0, which calculates to 0.05 mg of Cr+4/m³. It applies to soluble chromates of the types found in covered stainless electrode turnes and other chromium containing welding materials.

The OSHA PEL for nickel metal and soluble compounds is 1 mg/m³. The ACGIH TLV for nickel metal is 1 mg/m³ and the TLV for soluble compounds is 0.1 mg/m³. These limitations will also result in a significant reduction from the 5 mg/m³ general welding tume (NOC) level.

Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc.

One recommended way to determine the composition and quantity of times and gases to which workers are exposed is to take an air sample inside the welder's helmet if worn or in the worker's breathing zone. See ANSI/AWS FI.1 "Method for Sampling Airborne Particles Generated by Welding and Altied Processes" available from the American Welding Society, P.O. Box 351040, Miami, FL 33135.

## SECTION VI - HEALTH HAZARD DATA

Electric arc weiding or oxy fuel weiding may create one or more of the following health hazards:

FUNES AND GASES - can be dangerous to your health. COMMON ENTRY IS BY INHALATION.

**SHORT TERM (ACUTE) - over exposure** to welding turnes may result in discomfort such as: dizziness, nausea, or dryness or initiation of nose, throat, or eyes.

Chromates present in the tume can cause initiation of the respiratory system, damage to lungs and asthmatike symptoms.

Nickel compounds in the fume can cause a metallic taste, nausea, tightness in the chest, fever and allergic reactions.

Fluorides can cause pulmonary edema bronchitis.

**LONG TERM (CHRONIC) - over exposure to welding turnes** can lead to siderosis (iron deposits in the lung) and affect pulmonary function.

Long term over exposure to manganese compounds may affect the central nervous system. Symptoms include muscular weakness and tremors similar to Parkinson's disease. Behavioral changes and changes in handwriting may also appear. Employees exposed to manganese compounds should get quarterly medical examinations for early detection of manganism.

Studies have shown that production workers exposed to hexavalent chromium compounds have an increased incidence of lung cancers. Chromates may cause an ulceration and perforation of the nasal septum. Ever damage and altergic skin rash have been reported. Chromium VI compounds are required by OSHA to be considered carcinogenic.

Long term over exposure to nickel compounds may cause lung fibrosis or pneumoconiosis. Studies of nickel refinery workers indicated a higher incidence of lung and nasal cancers. Nickel and its compounds are required to be considered as carcinogenic by OSHA.

Repeated over exposure to fluoride turnes may cause serious bone erosion and excessive calcification of the bones and figaments of the ribs, pelvis and spinal column. Fluorides may also cause skin rash.

Shielding gases such as; argon, helium and carbon dioxide are asphyxiants and adequate ventilation must be provided.

Bear Customer: This Sulletin contains important environmental, health and toxicology information for your employees who recently ordered this product. Please make sure this information is given to them. If you reself this product, this Bulletin should be given to the Buyer. This Form may be reproduced without permission.

Chevron U.S.A. Inc.

APR 1 1986

# **Material Safety Data Sheet**

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200). (Formerly Called MATERIAL INFORMATION BULLETIN)



CHEVRON Pinion Grease 100 CB

CPS 253804

CAUTION!

PROLONGED OR REPEATED CONTACT THE WITH SKIN CAN BE HARMFUL

VAPOR HARMFUL

KEEP OUT OF REACH OF CHILDREN

TYPICAL COMPOSITION

Highly refined base oils (CAS 64742-57-0, 64742-01-4, 64742-

16-1)
Vacuum residuum (CAS 64741-56-6)
1,1,1-Trichloroethane (CAS 71-55-6)

Additives including inhibitor

20% <5%

>40%

<35%

#### **EXPOSURE STANDARD**

No Federal OSHA exposure standard or ACGIH TLV has been established for this material. The Federal OSHA exposure standard and the ACGIH (1984-85) TLV for 1,1,1-trichloroethane is 350 ppm for a daily 8-hour exposure.

#### PHYSIOLOGICAL & HEALTH EFFECTS

#### EMERGENCY & FIRST AID PROCEDURES

#### Eyes

Expected to cause no more than minor eye irritation.

Flush eyes immediately with fresh water for at least 15 minutes while holding the eyelids open. If irritation persists, see a doctor.

#### Skin

Expected to cause no more than minor skin irritation, but prolonged or frequently repeated skin contact may be harmful. See Additional Health Data.

Remove contaminated clothing. Wash skin thoroughly with soap and water. See a doctor is any signs or symptoms described in this bulletin occur. Launder contaminated clothing.

## Inhalation

Breathing the vapor at concentrations in air that exceed the Federal OSHA exposure standard for 1,1,1-trichloroethane can cause central nervous system effects. See Additional Health Data.

If there are signs or symptoms due to breathing this material as described in this bulletin, move the person to fresh air. If any of these effects continue, see a doctor.

#### Ingestion

Expected to have slight acute toxicity by ingestion. See Additional Health Data.

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

Chevron Environmental Health Center, Inc., P.O. Box 4054, Richmond, CA 94804-0054 Emergency Phone Number (415) 233-3737

X-1RC021 (07-85)

No. 388

Rev. 3 10/30/85

See Page 3.

#### SPECIAL PROTECTIVE INFORMATION

Eye Protection: No special eye protection is necessary.

**Skin Protection:** Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing impervious protective clothing including gloves.

Respiratory Protection: Wear approved respiratory protection such as an organic vapor cartridge respirator with toxic dust/mist/fume prefilter or an air-supplying respirator unless ventilation is adequate to keep airborne concentrations below the Federal OSHA exposure standard for 1,1,1-trichloroethane.

Ventilation: Use adequate ventilation to keep the airborne concentrations of this material below the Federal OSHA exposure standard for 1,1,1-trichloroethane.

#### FIRE PROTECTION

Flash Point: (COC)580°F Autoignition Temp.: NDA Flammability Limits: NDA

Extinguishing Media: CO2, Dry Chemical,

Foam, Water Fog.

Special Fire Fighting Procedures: For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus. See Hazardous Decomposition Products. Read the entire MSDS.

## SPECIAL PRECAUTIONS

Contains chlorinated hydrocarbon.

DO NOT weld, heat or drill container. Replace cap or bung. Emptied container still contains hazardous material which may ignite with explosive violence if heated sufficiently.

CAUTION! Do not use pressure to empty drum or explosion may result.

Environmental Impact: This material is not expected to present any environmental problems.

Precautions if Material is Released or Spilled: Clean up spills immediately, observing precautions in Special Protective Information.

Waste Disposal Methods: Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

#### REACTIVITY DATA

Stability (Thermal, Light, etc.): Stable. Incompatibility (Materials to Avoid): The solvent reacts violently with alkali and with various metal powders.

Hazardous Decomposition Products: Thermal decomposition of the solvent produces toxic phosgene gas and corrosive hydrochloric acid.

Hazardous Polymerization: Will not occur.

#### PHYSICAL PROPERTIES

**Solubility:** Soluble in hydrocarbon solvents; insoluble in water.

Appearance (Color, Odor, etc.): Black grease with chloroform-like odor.

Boiling Point: n/a
Melting Point: n/a
Specific Gravity: NDA
Vapor Pressure: NDA
Vapor Density (Air=1): NDA

Percent Volatile (Volume %): NDA

Evaporation: NDA

Viscosity: 430 c5t @ 40°C Dropping Point: 58°C(133°F)

n/a = Not Applicable
NDA = No Data Available

The above information is based on data of which we are aware and is believed to be correct as of the date hereof. Since the information contained herein may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon the condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

1

No. 388

# **Material Safety Data Sheet**

CHEVRON Pinion Grease 100 CB

CPS 253804

#### ADDITIONAL HEALTH DATA

This product contains base oils which the International Agency for Research on Cancer (IARC) classifies as having no evidence of carcinogenic potential.

This product contains 1,1,1-trichloroethane which is considered to be of low acute and chronic toxicity by ingestion or by skin absorption. Inhalation of vapors at concentrations above the exposure standard has an anesthetic effect, producing signs and symptoms of central nervous system depression which may include headache, dizziness, nausea, fainting and respiratory depression. Concentrations of 900 to 1000 ppm have produced temporary impairment of coordination. Obvious disturbances of equilibrium accompanied by headache and lassitude have been observed in humans at concentrations above 1700 ppm. 1,1,1-Trichloroethane may also produce transient alterations in heart function such as decreased blood pressure and erratic heart beat. Note to Physician: 1,1,1-Trichloroethane can sensitize the myocardium to catecholamine-induced arrhythmias.

This product contains petroleum vacuum residuum which is similar to petroleum asphalt. No association has been established between industrial exposure to petroleum asphalt and cancer in humans. The International Agency for Research on Cancer (IARC) has recently reviewed the carcinogenic potential of asphalts. They concluded that there insufficient evidence that undiluted, air-refined asphalt was carcinogenic to animals, while there was only limited evidence that steam-refined asphalts were carcinogenic to animals. Additionally there was insufficient evidence to conclude that asphalts were carcinogenic to human beings. Studies in which mice were exposed to a variety of whole asphalts did not result in any increased cancer rate; mice exposed to asphalts diluted with hydrocarbon solvents had increased incidence of certain types of cancer. Brief or intermittent skin contact with this asphalt product is not expected to produce any Serious effects. While normal handling of this product is not likely to cause cancer in humans, skin contact and breathing of mists, fumes or vapors should be reduced to a minimum. We strongly recommend that the precautions outlined in this bulletin be followed when handling this material.

X-IRCO41 (07-85)

MATERIAL SAFETY DATA SHEET

SECTION I

PRODUCT NAME: DUO SEAL DIL CAT. NO. 1407K SIZE:

MICAL NAME: PARAFFINIC HYDRO CARBON MINERAL OIL

FURMULA:

MANUFACTURER: SARGENT-WELCH SCIENTIFIC COMPANY

ADDRESS: 7300 NORTH LINDER AVE. SKOKIE. IL 60077 FOR INFORMATION ON HEALTH HAZARDS CALL: (312) 677-0600

FOR OTHER INFORMATION CALL: INFORMATION EFFECTIVE AS OF 11/5/85

SECTION II HAZARDOUS INGREDIENTS OF MIXTURES PRINCIPAL HAZARDOUS COMPONENT(S): NOT APPLICABLE

SECTION III PHYSICAL DATA

BOILING POINT (DEG.F): | SPECIFIC GRAVITY (H20=1): .8778

/APOR PRESSURE (MM HG): 4X10-4 AT 100 DEG.F! PERCENT VOLATILE

/APOR DENSITY (AIR=1): | BY VOLUME (%): NONE

SOLUBILITY IN WATER: NONE

APPEARANCE AND ODOR: LIGHT HONEY: SLIGHT TO NO ODOR.

SECTION IV FIRE AND EXPLOSION HAZARD DATA
FLASH POINT (METHOD USED):450 DEG.F ASTM D92 OR 93
FLAMMABLE LIMITS:FIRE POINT 510 F | LEL: | LUEL:
EXTINGUISHING MEDIA:CHEMICAL+U.L. CLASSIFICATION 2-A:30-B:C
SPECIAL FIRE-FIGHTING PROCEDURES:NONE
JNUSUAL FIRE AND EXPLOSION HAZARDS: NONE

SECTION V HEALTH HAZARD DATA

[HRESHOLD LIMIT VALUE: 0.S.H.A. 1910.93 OIL MIST 5 MG/M3

ECTS OF OVEREXPOSURE: NONE KNOWN.

EMERGENCY AND FIRST-AID PROCEDURES: UNKNOWN;

CONTACT DOCTOR IF SWALLOWED. NOT KNOWN TO HAVE EVER CAUSED ILLNESS.

SECTION VI REACTIVITY DATA

STABILITY: STABLE.

INCOMPATIBILITY (MATERIALS TO AVOID): NONE KNOWN
HAZARDOUS DECOMPOSITION PRODUCTS: NONE

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

SECTION VII SPILL OR LEAK PROCEDURES STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: WIPE UP OR ABSORB-VASTE DISPOSAL METHOD: CONTAINER BACK TO A REFINERY OR CONTROLLED BURNING.

SECTION VIII SPECIAL PROTECTION INFORMATION
RESPIRATORY PROTECTION(SPECIFY TYPE): NONE; SPECIAL TO MIST FILTER ON EQUIPMENT
VENTILATION; LOCAL EXHAUST: YES, BUT PREFER FILTERS.

YES MECHANICAL (GENERAL): FILTERS.

PROTECTIVE GLOVES. NO. EYE PROTECTION: GLASSES.

THER PROTECTIVE EQUIPMENT: NONE.

SECTION IX SPECIAL PRECAUTIONS RECAUTIONS TO BE TAKEN IN HANDLING AND STORING: AVOID OPEN FLAME OR HEAT SOURCES.

INFORMATION HEREIN IS BELIEVED TO BE CORRECT AS OF THE DATE HEROF. BUT IS PROVIDED WITHOUT WARRANTY OF ANY KIND.

LAST PAGE

## MATERIAL SAFETY DATA SHEET - Prepared according

to the DSHA Hezard Communication Standard (29 CFR 1910,1200).

FUEL PROCESSORS INC. & OIL RE-REFINING CO. CUTTER STOCK #1993

DANGER!

HARMFUL OR FATAL IF SWALLOWED PROLONGED OR REPEATED CONTACT WITH SKIN CAN BE HARMFUL COMBUSTIBLE

KEEP OUT OF REACH OF CHILDREN!

TYPICAL COMPOSITION: A mixture of petroleum residuals & Cutter Stocks blended to meet specifications.

EXPOSURE STANDARD: No Federal OSHA exposure standard of ACGIH TLV has been established for this material. However, due to possible carcinogenic effects, exposure should be reduced to the lowest feasible level. This product may emit hydrogen sulfide (H<sub>2</sub>S). The Federal OSHA exposure standard for hydrogen Sulfide (H<sub>2</sub>S) is 20 ppm (a ceiling value). It may be exceeded (up to 50 ppm) for 10 minutes in any 8-hour period in which no other measurable exposure occurs. The ACGIH (1985-86) TLV is 10 ppm (8-hour time weighted average).

#### PHYSIOLOGICAL & HEALTH EFFECTS

## EMERGENCY & FIRST AID PROCEDURES

Expected to cause no more than minor eye irritation.

Flush eyes immediately with fresh water for at least 15 minutes while holding the eye lids open. If the irritation persists, see a doctor.

Expected to cause no more than minor skin irritation, but prolonged or frequently repeated skin contact may be harmful. See Additional Health Data.

Skin

EYES

Remove contaminated clothing. Wash skin throoughly with soap & water. See a doctor if irritation occurs. Launder contaminated clothing.

Not expected to be acutely toxic by inhalation. See Additional Health Data.

#### INHALATION

Since this material is not expected to be an acute inhalation problem, no first aid procedures are required.

#### INGESTION

Not expected to cause acute systemic toxicity by ingestion. Note to Physician: ingestion of this product or subsequent vomiting can result in aspiration of light hydrocarbon liquid which can cause pneumonitis.

If swallowed give water or milk to drink and telephone for medical advice. DO NOT make person vomit unless directed to do so by medical personnel. If medical advice cannot be obtained take person and product container to the nearest medical emergency treatment center or hospital.

#### SPECIAL PROTECTIVE INFORMATION

Eye Protection: No special eye protection is necessary. Skin Protection: Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing impervious protective clothing including gloves. Respiratory Protection: No special respiratory protection is normal ly required. However, if operating conditions create high air-borne concentrations, use of an approved respirator is recommended. Note: If any of the applicable H2S standards are likely to be exceeded, positive supplied-air respiratory protection must be used.

Ventilation: Use this material only in well ventilated areas.

FIRE PROTECTION: Liquid evaporates and forms vapor (fumes) which can catch fire & burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and syitches. Fire hazard is greater as liquid temperature rises about 85 F. Flash Point: (P-M) 100 F. Min. Name / 2/0 F belong Purchast. Extinguishing Media: CO<sub>2</sub>, Dry Chemical, Foam Water Fog. Special Fire Fighting Procedures: For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing See Hazardous Decomposition Products. Read the entire apparatus. SPECIAL PRECAUTIONS: See page 3. MSDS.

#### ENVIRONMENTAL PROTECTION

Environmental Impact: This material is considered to be a water pollutant and should be kept out of sewage and drainage systems and all bodies of water.

Precautions if Material is Released or Spilled: Eliminate all open flame in vicinity of spill or released vapor. Stop the source of the leak or realease. Clean up releases as soon as possible, observing precautions in Special Protective Information. Contain liquid to prevent further contamination of soil, surface water or Clean up small spills using appropriate techniques groundwater. sorbent materials or pumping. Where feasible and Follow appropriate, remove contaminated soil. procedures for reporting and responding to larger releases. Waste Disposal Methods: Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for

approved disposal of this material.

#### REACTIVITY DATA

Stability (thermal, light, etc.): Stable.

Incompatibility (Materials to avoid): May react with strong

oxidizing materials.

Hazardous Decomposition Products: Normal combustion forms of carbon dioxide and water vapor and may produce oxides of sulfur. Incomplete combustion can produce carbon monoxide.

Hazardous Polymerization: Will not occur.

PHYSICAL PROPERTIES: Solubility: Insoluble in water; miscible with hydrocarbons. Appearance (color, odor, etc.): Black liquid. Specific Gravity: 20 to 28

Pour Point: +20°F. Viscosity: 220 to 250 %Sulfur: Under .096.

#### MATERIAL SAFETY DATA SHEET page 3

#### ADDITIONAL HEALTH DATA:

This material is of varying composition and may contain significant amounts of polynuclear aromatic hydrocarbons (PNAs) which have been shown to cause skin cancer after prolonged or frequent contact with the skin of test animals. When a similar material was repeatedly applied to the skin of mice, there was a moderate increase in skin cancer. We strongly recommend that the precautions outlined in this MSDS be followed to reduce skin contact and inhalation of mists or vapors to a minimum.

#### SPECIAL PRECAUTIONS:

DO NOT USE OR STORE near flame, sparks or hot surfaces. USE ONLY IN A WELL VENTILATED AREA. Keep container closed. DO NOT weld, heat or drill container. Replace cap or bung. Emptied container still contains hazardous or explosive vapor or liquid.

Toxic quantities of hydrogen sulfide (H<sub>2</sub>S) may be present in storage tanks and bulk transport vessels which contain or have contained fuel oil. Persons opening or entering these compartments should first determine if H<sub>2</sub>S is present. See Special Protective Information. As an indicator of H<sub>2</sub>S concentration, the rotten eggs odor is unreliable because it may be masked by other odors. Therefore, DO NOT ATTEMPT RESCUE WITHOUT WEARING APPROVED SUPPLIED-AIR OR SELF CONTAINED BREATHING EQUIPMENT.

## HEALTH HAZARD DATA

Applicable Statutory or Recommended Occupational Exposure Limits: See Section II - Hazardous Ingredients. No TLV exists for plastic products, the hazards associated with plastic are for the individual constituents.

**Emergency and First Aid Procedures:** 

In the event of acute exposure, remove to fresh air, administer oxygen, and seek a physician's assistance.

## VI. REACTIVITY DATA

Stability: Considered Stable

incompatibility: Not incompatible with materials Hazardous Polymerization: Not Applicable Hazardous Decomposition Products: See Chart

Conditions to Avoid: When heated to decomposition or combustion temperatures products of decomposition include

carbon dioxide, carbon monoxide and other volatiles as indicated.

### VII. SPILL OR LEAK PROCEDURES

Steps to be Taken in Case Material is Released or Spilled: Not Applicable Waste Disposal Method: Approved method of solid waste disposal.

### VIII. SPECIAL PROTECTION INFORMATION

When machining thermosetting plastics dry, a dusty condition may result. A suitable dust collection system should be employed along with a dust mask for respiratory protection. A protective cream or clothing should be used to protect skin for worker comfort. When machining any plastics, safety glasses or a face shield should be used.

#### IX. SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing: Not Applicable

Other Precautions: When fighting fires where plastics are burning a self contained breathing apparatus (SCBA) must be used.

Issued By: Joseph T. Ryerson & Son Inc.

Date Prepared: November 8, 1985



## **Material Safety Data Sheet**

## **PLASTICS**

#### 1. PRODUCT IDENTIFICATION

Distributor: Joseph T. Ryerson & Son, Inc.

Address: 2621 W. 15th Place

Chicago, Illinois 60608 Emergency Telephone: 312/762-2121

Chemical Name and Synonyms: Plastics

Chemical Family: Plastics

Formula: Mixture

## II. PRODUCT DESCRIPTION AND HAZARDOUS INGREDIENTS/IDENTITY INFORMATION:

See Chart Inside

#### III. PHYSICAL DATA

Melting Point F (C): See Chart Vapor Pressure: Not Applicable

% Volatile by Volume (%): Not Applicable **Evaporation Rate:** Not Applicable Vapor Density (Air = 1): Not Applicable

Solubility in Water: Negligible

Appearance and Odor: Various colors from white to black, in sheet, plate, bar, structurals, or tubing

#### IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point F (C): Not Applicable

Extinguishing Media: Use methods applicable to

Flammable Limits: Not Applicable Unusual Fire and Explosion Hazards: None

Specific Gravity ( $H_20 = 1$ ): See Chart

surrounding area.

Special Fire Fighting Procedures: Use self-contained breathing apparatus for protection against degradation products from surrounding materials.

#### DISCLAIMER

RYERSON MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABIL-ITY AND FITNESS FOR A PARTICULAR PURPOSE.

The information contained in this Material Safety Data Sheet (MSDS) is believed to be correct, but no representations, guarantees or warranties of any kind are made as to its accuracy, suitability for particular applications, hazards connected with the use of the material or the results to be obtained from the use thereof. User assumes all risk and liability of any use, processing or handling of any material. Variations in methods, conditions, equipment used to store, handle or process the material and hazards connected with the use of the material are solely the responsibility of the user and remain at its

As sold, the product described in this MSDS is considered by Ryerson to be an "article" within the meaning of Title 29 of the Code of Federal Regulations, Section 1910.1200 et seq. This MSDS is intended to be used solely for the purpose of satisfying informational requests made pursuant to that requirement. It is not intended to preempt, replace or expand the terms contained in Ryerson Conditions of Sale. Compliance with all applicable federal, state and local laws and regulations remains the responsibility of the user, and the user has the responsibility to provide a safe workplace, to examine all aspects of its operation, and to determine if or where precautions, in addition to those described herein, are required.

Grade	Specific Gravity	Melting Point °F	Flash Ignition Temp. °F	
Thermosets				Hazardous Products of Combustion
Resin Reinforcement				
Phenolic Cellulose	1.10-1.40	Dhua		
Phenolic Glass	1.70-1.90	DNM*	Non-Volatile	Carbon Monoxide — Formaldehyde
Melamine Glass	1.70-1.95	DNM	Non-Volatile	Carbon Monoxide — Formaldehyde
Silicone Glass	1.55-2.05	DNM	Non-Volatile	Carbon Monoxide — Formaldehyde
Epoxy Glass	1.65-2.20	DNM DNM	Non-Volatile	Carbon Monoxide
Polyester Glass	1.61-2.00	=	Non-Volatile	Carbon Monoxide — Formaldehyde — Hydrogen Bromide
Vinylester Glass	1.83	DNM	650	Carbon Monoxide
Polyester FR Glass	1.83	DNM	650	Carbon Monoxide
Thermonlastics	1.55	DNM	650	Carbon Monoxide — Hydrogen Bromide
Thermoplastics				
Nylon 6	1.14-1.18	420	750	Carbon Monoxide — Ammonia
Nylon 6/6	1.14-1.15	490	750	Carbon Monoxide — Ammonia
Acetal	1.34-1.42	350	613	Formaldehyde
Polyethylene	0.935-0.996	250	665	Carbon Monoxide — Carbon Dioxide
Polypropylene	0.090	320	830	Carbon Monoxide
Polyvinyl Chloride	1.40-1.44		735	Carbon Monoxide — Hydrogen Chloride
Chlorinated PVC	1.53	200	830	Carbon Monoxide — Hydrogen Chloride
Polyurethane	1.25	400	590	Carbon Monoxide — Hydrogen Cyanide
Plasticized PVC	1.2	200	610	Carbon Monoxide — Hydrogen Chloride
Polyvinylidene Fluoride	1.77	320	600	Carbon Monoxide — Hydrogen Fluoride
Polystyrene	1.05	199-221	None	Carbon Monoxide — Hydrocarbons
ABS	1.04	231-257	490-530	Carbon Dioxide — Carbon Monoxide — Hydrocarbons
Annella				Hydrogen Cyanide — Styrene Acrylonitrile
Acrylics	1.18	<b>194</b> -221	860	Methyl Methacrylate Monomer
Fluoroplastics	1.70-2.20	932	NA	wenty we will be well and the weather will be well and the west of
Polycarbonate	1.20	302	1050	Hydrofluoric Acid Gas — Perfluorocarbon Olefins
Dobreville				Bisphenol A Methane Phenol Diphenyl — Carbonate
Polysulfone	1.24	374	550°-600°C	Carbon Monoxide — Carbon Dioxide
Ryton	4.5.4.6			Sulfur Dioxide — Hydrocarbons
riyion	1.45-1.6	500-675		None

#### MATERIAL SAFETY DATA SHEET

*fective Date: 11-18-85		SECTION :	<b>.</b>			Page 1
nanutacturer's Name		SECTION .		gency Telephone	No.	
THE WHITMORE MANUFACTURING COMPA	ANY		(21	4) 722-2202		
Manufacturer's Address (Number,	Street,	City, Sta	ate, ZIP)		<del></del>	
930 Whitmore Drive, Rockwall, Te Chemical Name and Synonyms	xas 7508	7-0930	T Muse d	Name and State		
<del>" -</del>			Mech	e Name and Synor anic's Thread Lo	oseve J <b>am</b> e	r/
Aerosol Penetrating Oil Chemical Family			Aero	sol		
Hydrocarbon				ture		
				cure		
SBC	LION II -	TLV	us ingredients			TLV
Paints, Preservatives and Solver	nts 💲	(Per 8 hrs.)	Alloys and Me	tallic Coatings		(Per 8 hrs.)
Pigments N/A		·	Base Metal	N/A		
Catalyst N/A		<u> </u>	Alloys	N/A		
Vehicle N/A			Metallic Coat	ings N/A	<u> </u>	
Solvents N/A			Filler Metal Plus Coating Core Flux	or N/A		
		<del>†</del>				<del></del>
Additives N/A	<u> </u>	<del> </del>	Others	N/A	1	<del> </del>
Others N/A		<u> </u>	<u> </u>		<del> </del>	TLV
Hazardous Mixtures	of Other	Liquids	, Solids or Ga	ses		(Per 8 hrs.)
_,1,1, trichlorethane CAS 71-5	5-6	·				100 PPM
Methylene Chloride CAS 75-09-2						100 PPM
	SECTION	III - PH	YSICAL DATA			
Boiling Point (°F) Solvent °F	104°F	Speci	fic Gravity (H	20=1)	0.	.91
Vapor Pressure @ 68 °F	<130°F	Perce	nt, Volatile b		28	
Heavier than Vapor Density (AIR-1) air	>1	Evapo	ration Rate ac	Butyl (etate = 1)	14.	.5
Solubility in Water Less than	Nil					
<u> </u>	uid-Petro	oleum Odo	r			
			LOSION HAZARD	DATA		
Flash Point (Method Used)			ble Units	Lel		Uel
Greater than 100°F T.O.C.						
Extinguishing Hedia				•		
Special Fire Fighting Procedure Keep containers cool. Use equi to chlorinated hydrocarbons req containers.	pment or	shieldin protect	ng. Use OSHA f personnel agai	ace breathing π inst bursting or	ask re	esistant ing
Unusual Fire and Explosion Haza At elevated temperatures (130°	or over)	containe	ers may vent, :	cupture or burst		
1	Continu	ed on Re	verse Side			N

Form-152 Revised 10-20-86 (Cleveland)

#### SECTION V - HEALTH HAZARD DATA

Threshold Limit Value 100 PPM 8 hour weighted average. Effects of Overexposure Prolonged skin or any eye contact will cause irritation. Prolonged breathing of vapors cause lung irritation and may be harmful to your health. Harmful or fatal if swallowed. Emergency and First Aid Procedures Skin Contact - Remove by wiping followed by washing with soap and water. Eye contact - Wash with large amounts of water. Indestion - Do not induce vomiting. SEEK MEDICAL ATTENTION. 6. Inhalation - move to fresh air source if irritation persists. Seek medical attention. SECTION VI - REACTIVITY DATA Unstable

Conditions to Avoid Stability Stable Pressurized containers could rupture above 130°F Incompatibility (Materials to Avoid)
Strong oxidizing agents Hazardous Decomposition Products Exposure to direct flame may cause the following: co, co, HCl, cocl May Occur Conditions to Avoid Hazardous Polymerization Will Not Occur X

SECTION VII - SPILL OR LEAK PROCEDURES

Steps to Be Taken in Case Material 1s Released or Spilled Absorb with dry inert powder & shovel up.

Waste Disposal Method Do not puncture or incinerate containers. equipped to safely handle and dispose of pressurized containers. Give to a disposal

SECTION VIII - SPECIAL PROTECTION INFORMATION Respiratory Protection (Specify Type) Wear filter type respirator in confined areas or in poor ventilation. Local Exhaust **Ventilation** Special Normal use - normal ventilation N/A Mechanical (General) Other N/A Either N/A Protective Gloves Eye Protection Plastic or neoprene rubber Sāfety Goggles Other Protective Equipment

SECTION DK - SPECIAL PRECAUTIONS

Precautions to Be Taken in Handling and Storing
Read and follow cautions on the product label. Do not store in temperatures above 120°F

Other Precautions

No special precautions.

Comments: The data and recommendations presented herein are based upon our research and the research of others, and are believed to be accurate. No guarantee of their accuracy is made, however; and the products discussed are distributed without warranty, expressed or implied, and the person receiving them shall make his own determination of the suitability thereof for his particular purpose.

Alla 23 1989 ASHGROVE CEMENT Form-152 Revised 10-20-86 (Cleveland)

Continued on Reverse Side

Form-151 Revised 10-20-88 (Cleveland)



たたれ かけた 一句 アン・・・・・・・・・ かぬきぬをからがまれます。

265 - 1 1998

10

		TT- T
Thresho	 m 1 I	VALUE

350 PPM 8 hr. weighted average, ACGIH

Effects of Overexposure
Prolonged skin or any eye contact will cause irritation. Prolonged breathing of vapors
will cause irritation to the respiratory tract, irregular heartbeats and dizziness,
weakness, fatigue, nausea, headache, and possible unconsciousness and even asphyxiation.
Ingestion causes gastrointestinal irritation, nausea, vomiting and diarrhea. Aspiration
of material into the lungs can cause chemical pneumonia which can be fatal.
Emergency and First Aid Procedures
Skin Contact - Remove by wining followed by washing with soan and water

Skin Contact - Remove by wiping followed by washing with soap and water. Eye contact - Wash with large amounts of water.

Ingestion - Do not induce vomiting. SEEK MEDICAL ATTENTION.

Inhalation - Move to fresh air source if Seek medical attention

·		SCITUM Y		CTACTIAL T				<u> </u>		
Stability	Unstable		Cond	iitions	to Avoid			ing in the second of the secon		والمراجع والمراجع المراجع المر
	Stable	x	X Pressurized containers		ers cou	could rupture above		above	 ≥ 130°P	
Incompatibility ()	Materials to Av	701d)		Andrew State					7	
Strong oxidizing	agents	ar marketing						e garage de la company		า เราะสมสาร
Hazardous Decompos $\infty$ , $\infty_2$ , HCl, $\infty$ C	sition Products 1, 80 <sub>2</sub>	s Expos	sure 1	to direc	t flame	may cau	se th	e follo	wing:	
Hazardous	May Occur			Conditi	ons to 1	void		e de diference		42.5.5
Polymerization	Will Not Occ	ır	v					or Theorem 17 a		

SECTION VII - SPILL OR LEAK PROCEDURES

Steps to Be Taken in Case Material Is Released or Spilled Absorb with dry inert powder & shovel up.

Waste Disposal Method Do not puncture or incinerate containers. equipped to safely handle and dispose of pressurized containers. Give to a disposal

I	SECTION VIII - SPECIAL PROTECTION INFORMATION
Respiratory Protect	ion (Specify Type)
Wear NIOSH/MSHA Or	panic filter type respirator in confined areas or in poor ventilation.
Ventilation	ocal Exhaust Required N/A
	Mechanical (General)  Either  N/A
Protective Gloves Plastic or neopreme	rubber Safety Goggles
Other Protective Ex	lipment
None	그는 사람들은 사람들은 사람들이 되었다. 그는 사람들은 사람들은 사람들은 사람들은 사람들은 사람들은 사람들은 사람들은

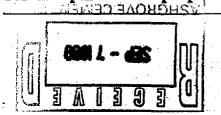
SECTION IX - SPECIAL PRECAUTIONS

Precautions to Be Taken in Handling and Storing Read and follow cautions on the product label. Do not store in temperatures above 120°F

#### Other Precautions

Comments:

The data and recommendations presented herein are based upon our research and the research of others, and are believed to be accurate. No quarantee of their accuracy is made, however; and the products discussed are distributed without warranty, expressed or implied and the person receiving them shall make his own determination of the suitability thereof for his particular purpose.



Form 151 Revised 10-20-88 (Cleveland)

## PRODUCT NAME

Comtra No.S C-000-009

Refer to Material Safety Data Sheet for more information.

## MANUFACTURER

Eagle Foundry Company P.O. Box 250
Eagle Creek, OR 97022



## FIRE HAZARD

4. EXTREMELY DANGEROUS FIRE AND EXPLOSION HAZARD

3. FIRE AND EXPLOSION HAZARD AT NORMAL TEMP

2. WILL BURN AT TEMPS ABOVE 100 F

1. WILL BURN AT TEMPS ABOVE 200 F

(Blue)

0

O. WILL NOT BURN

HEALTH

## HAZARD

EXTREME HAZARD -AVOID CONTACT OR BREATHING VAPOR

- SEVERE HAZARD USE SPECIAL CLOTHING
   AND MASKS
- AND HAZARDOUS USE
  MASKS: OR SPECIAL
  VENTILATION
- 1. SLIGHTLY HAZARDOUS -IRRITATING
- 0. NORMAL MATERIAL

REACTIVITY

## HAZARD

- EXTREME HAZARD -VACATE AREA IN CASE OF FIRE
- SEVERE EXPLOSION HAZARD
- VIOLENT CHEMICAL CHANGE POSSIBLE
- 1. UNSTABLE IF HEATED
- 0. NORMALLY STABLE

USE NO POLYMERIZES WATER

(Red)

0

(Yellow)

0

ANSI: CAUTION: WELDING, CUTTING, OR GRINDING ON THIS CASTING WILL GENERATE IRRITATING DUST OR FUMES.

#### INGREDIENTS:

(PERCENT)

Iron Janganese Balance

janganese Silicon 0 - 14.00 - 2.25

See Material Sa

See Material Safety Data Sheet for a listing of minor ingredients.

STORAGE AND HANDLING

No Special Precautions

MATERIAL SAFETY DATA SHEET (MSDS)

SC-000-009 REV. 1 DATE 11/22/85 CODE 06-04

CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200

"HAZARD COMMUNICATION" AND TO VARIUS STATE
"EMPLOYEE RIGHT TO KNOW" LAWS

#### COPYRIGHT 1985 STEEL FOUNDERS SOCIETY OF AMERICA

SECTION I PRODU	CT IDENTIFICATION
This MSDS supplied for: Car	bon and Alloy Cast Steels
ASTM No. AS7-84	ACI alloy designation (Grades) $N-1$ , $N-2$ , $U-60-30$ , $60-30$ , $65-35$ , $70-36$ , $70-40$
A128/A128M-84	A, B-1, B-2, B-3, B-4, E-1, E-2, F
A148/A148M-84	80-40, 80-50, 90-60, 105-85, 115-95, 135-125, 150-135, 160-145, 165-150, 165-150L, 210-180, 210-180L, 260-210, 260-210L
A216/A216M-84	WCA, WCB, WCC
A217/A217M-84	WC1, WC5
A352/A352M-84	LCA, LCB, LCC, LC1
A356/A356M-84	1, 2, 5
A426-80	CP1, CP2, CP15
A486/A486M-84	70, 90, 120
A487/A487M-84	1N, 2N, 4N, 6N, A, AN, B, BN, C, CN, DN, 1Q, 2Q, 4Q, 4QA, 6Q, AQ, BQ, CQ
A597/A597M-84	CS-5
A660-79	WCA, WCB, WCC
A732/A732M-84	1A, 2A, 2Q, 3A, 3Q, 4A, 4Q, 5N, 6N, 13Q, 14Q
A757/A757M-84	A1Q, A2Q
SAE AUTOMOTIVE	
J435c	0022, 0025, 0030, 0050A, 0050B, 080, 090, 0105, 0120, 0150, 0175
AAR	
M201-81	A, B, C, D, E
ABS	1, 2, 3, 4, Hull

N/D ---- non- cotablished N/A mone act and and action

ASTM No.	ACI alloy designation (Grades)
FEDERAL	
QQ-S-681F	N-1, N-2, U-60-30, 60-30, 65-35, 70-36, 70-40, 80-40, 80-50, 90-60, 105-85, 120-95, 150-125, 175-145
MIL-S-15083B (NAVY)	CW, B, 65-35, 70-36, 80-40, 80-50, 90-60, 105-85, 120-95, 150-125
MIL-S-46052A (MR)	180-150, 220-180, 260-210

LLOYDS

VENDOR NAME AND ADDRESS:

#### EMERGENCY PHONE NUMBER:

FIRE HAZARD CLASS: HEALTH: 0 FLAMMABILITY: 0 REACTIVITY: 0
THE FOURTH DIAMOND:

ANSI: CAUTION: WELDING, CUTTING, OR GRINDING ON THIS CASTING WILL GENERATE IRRITATING DUST OR FUMES.

#### SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Carbon	7440-44-0	0-1.45	N/E	N/E
Chromium	7440-47-3	0-0.90	0.5 mg/cu.m	1 mg/cu.m
Copper (As dust)	7440-50-8	0-0.50	1.0 mg/cu.m	1.0 mg/cu.m
(As fume)			0.2 mg/cu.m	0.1 mg/cu.m
Iron oxide (As fume)	1309-37-1	balance	5 mg/cu.m	10 mg/cu.m
Manganese (As dust)	7439-96-5	0-14.0	C 5 mg/cu.m	C 5 mg/cu.m
(As fume)			1 mg/cu.m	C 5 mg/cu.m
Molybdenum	7439-98-7	0-2.1	10 mg/cu.m	15 mg/cu.m
Nickel*	7440-02-0	0-1.0	1 mg/cu.m	1 mg/cu.m
Phosphorus	7723-14-0	0-0.07	0.1 mg/cu.m	0.1 mg/cu.m
Silicon	7440-21-3	0-2.25	10 mg/cu.m	15 mg/cu.m
			(as nuisanc	
Sulfur	7704-34-9	0-0.06	N/E	N/E
Tungsten	7440-33-7	0-0.25	5 mg/cu.m	N/E
Vanadium (as vanadium	oxide)		_,	·
(As dust)	7440-62-2	0-0.35	0.05 mg/cu.m	0.5 mg/cu.m
(As fume)			0.05 mg/cu.m	

C means ceiling limit. These are limits which should not be exceeded, even for a short time. All other limits are 8-hr Time-weighted average concentrations.

PAGE 3

Elements having a listed percentage greater than zero will be present in all grades. Those having a value of "0" may not be present in certain grades. Refer to Steel Founders' Society of America "Steel Castings Handbook" Supplement 2 for specifications on a particular alloy and grade.

\* Nickel has been shown to cause cancer in laboratory animals. However its potential to cause cancer in humans has not been determined.

#### SECTION III - OVERVIEW

There are no chemical hazards from these castings in solid form at room temperature.

Dust or fumes are generated by machining, grinding, or welding on these castings. Since the castings contain a high percent of iron, most of the dust or fume will be iron or iron oxide. There is no TLV for iron dust, but available information indicates that a concentration of 10 mg/cu.m., as if it were a nuisance dust, will serve as a guideline until a TLV is established.

High production dry machining of gray iron castings usually requires local exhaust ventilation.

Flame cutting, arc gouging, or welding on the casting generates iron oxide fume. Inhalation of too much iron oxide fume over a long time can cause siderosis, sometimes called "iron pigmentation" of the lung. It can be seen on a chest x-ray but causes little or no disability. Also see the Material Safety Data Sheet for the welding rod being used.

Some grades contain manganese. Long term overexposure to manganese dust or fume can cause manganese poisoning. If welding or flame cutting fume is controlled to the TLV for total fume, the manganese fume will also be controlled.

Some forms of nickel have been found to cause cancer in animals. One form, nickel subsulfide, which was present in an old smelting process no longer used, apparently caused nasal cancer in humans. Since then, studies have shown that the potential for ordinary forms of nickel and its oxides to cause cancer in humans is very weak, if it exists at all. The nickel content of the casting is so low (less than l%) that over-exposure is not likely.

Grinding on castings that have not been cleaned or that have sand embedded in the iron will generate significant amounts of dust containing free silica, which can cause silicosis. Good local ventilation is frequently required to prevent over-exposure in this situation. If good ventilation is not available, use a NIOSH-approved dust respirator.

Carbon, chromium, copper, molybdenum, phosphorus, silicon, sulfur, tungsten, and vanadium are also contained in the casting in low amounts. Over-exposure to these would not be likely.

GE 5

Collected dust from machining, welding, etc. may be classed as a "hazardous waste" depending on circumstances. Consult local authorities regarding disposal.

SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: Wear a NIOSH approved respirator for dusts or fume if concentrations exceed the TLV's.

VENTILATION: Provide general ventilation and/or local exhaust if necessary to maintain concentrations below the TLVs.

PROTECTIVE GLOVES: Work gloves advisable for handling castings.

EYE PROTECTION: Safety glasses with side shields and/or face shields for particles (grinding). Welding goggles or helmet for welding.

OTHER PROTECTIVE EQUIPMENT: Wear a protective apron and gauntlets if arc-air gouging or cutting, or welding on castings.

If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: No special precautions.

THE INFORMATION PRESENTED HERE HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE RELIABLE AND IS ACCURATE AND RELIABLE TO THE BEST OF OUR KNOWLEDGE AND BELIEF BUT IS NOT GUARANTEED TO BE SO.

NATIONAL SANITARY SUPPLY CO. 13217 S. Figueroa Street Los Angeles, California 90061 Tel. No. 213/770-1970 Emergency Tel. No. 213/327-6795 MATERIAL SAFETY DATA SHEET SECTION 1. IDENTIFICATION OF PRODUCT Date Issued: 11/25/85 Supercedes: 6/1/84 National Item#: 1720XX Product Name: DEODORANT CLEANER EXPOSURE LIMITS IN AIR OSHA PEL ACGIN TLV 0 SECTION 2. INGREDIENTS CAS NUMBER PERCENT OTHER 17.00 <15.00 <3.00 <10.00 >50.00 ISOPROPYL ALCOHOL 67-63-01 400 ppm TVA 400 ppm SOAP WATER CONDITIONER FRAGRANCE WATER N/A = Not Applicable: N/D = Not Determined SECTION 3. PHYSICAL DATA Boiling Point (F): <212 Specific Gravity (Water=1): .86
Vapor Pressure (mm Hg.): 16 Percent Volatile (By Volume): 88
Vapor Density (Air=1): ND Evaporation Rate (Water =1): 1
Solubility in Water: SOLUBLE pH Range: 10.5
Appearance and Odor: CLEAR COLORLESS/MINT SCENT FIRE AND EXPLOSION HAZARD DATA Section 4. Flash Point (Test Method): 90 F (TCC)
Flammable Limits: LEL= 2 UEL= 12
Extinguishing Media: CO2, DRY CHEMICAL, FOAM, WATER FOG Special Fire Fighting Procedures: NORMAL FIRE FIGHTING PROCEDURES MAY BE USED. COOL AND USE CAUTION WHEN APPROACHING OR HANDLING FIRE-EXPOSED CONTAINERS. Unusual Fire & Explosion Hazards: CONTAINERS MAY BURST IN HEAT. REACTIVITY DATA SECTION 5. Stability: STABLE Incompatibility - Materials to Avoid: NONE KNOWN TO NSS Hazardous Polymerization: WILL NOT OCCUR Conditions to Avoid: NONE KNOWN TO NSS Hazardous Decomposition Products: WHEN EXPOSED TO FIRE, PRODUCES NORMAL PRODUCTS OF COMBUSTION. SECTION 6. SPILL, LEAK AND DISPOSAL PROCEDURES Spill Response: FOR SMALL SPILLS. DILUTE WITH WATER AND PICK UP WITH MOP AND PAIL OR WET PICK UP VACUUM. FOR LARGE SPILLS, DIKE AREA TO CONTAIN SPILL. CLEAN UP USING ABSORBENT MATERIAL. PLACE ALL CONTAMINATED MATERIAL IN A CLOSED CONTAINER FOR DISPOSAL.

Product Disposal: WASTE FOR DILUTED PRODUCT MAY BE FLUSHED TO SEWER UNDILUTED PRODUCT RECOVERED FROM SPILLS MAY BE SENT TO A LICENSED DISPOSAL FACILITY TO BE DISPOSED OF IN ACCORDANCE WITH FEDERAL/STATE REGULATIONS AND LOCAL ORDINANCES.

Container Disposal: TRIPLE RINSE EMPTY CONTAINER THOROUGHLY WITH WATER AND DISCARD IN REGULAR TRASH COLLECTION IF ALLOWED BY LOCAL, STATE AND FEDERAL REGULATIONS.

Appendix33-000197

```
SECTION 7. HEALTH HAZARD DATA
Symptoms of Overexposure:
Eye Contact: EYE IRRITANT. IF NOT PROMPTLY TREATED, EYE DAMAGE MAY RESULT.
Skin Contact: SKIN IRRITANT. IRRITATION CAN OCCUR FROM CONTACT WITH CONCENTRATED PRODUCT OR FROM PROLONGED CONTACT WITH DILUTED PRODUCT. REPEATED OR PROLONGED EXPOSURE TO DILUTED PRODUCT MAY LEAD TO DERMATITIS.
Inhatation: NO HEALTH EFFECTS ARE KNOWN TO OCCUR FROM INHALATION OF THIS PRODUCT UNDER NORMAL USE IN A WELL VENTILATED AREA. HIGH AIRBORNE CONCENTRATIONS OF MISTS OR SPRAYS OF THIS PRODUCT MAY CAUSE IRRITATION OF THE UPPER RESPIRATORY TRACT.
Ingestion: INGESTION OF THE MOUTH, THROAT, AND GASTROINTESTINAL TRACT WHICH THE PRODUCT CONTACTS. BURNS OF THE MOUTH AND THE OCCUR.
                                                                                                                                                                                                                                                                                MOUTH AND
  THE ISOPROYL ALCOHOL LISTED IN SECTION 2 IS NOT LISTED ON THE OSHA, NTP OR TARC MONOGRAPH CARCINGGEN LISTS.
   SECTION 8. EMERGENCY AND FIRST AID PROCEDURES
 Eye Contact: IMMEDIATELY FLUSH THE EYE WITH LARGE QUANTITIES OF RUNNING WATER FOR A MINIMUM OF 15 MINUTES. HOLD THE EYELIDS APART DURING THE IRRIGATION TO ENSURE FLUSHING OF THE ENTIRE SURFACE OF THE EYE LID WITH WATER. GET MEDICAL ATTENTION IF IRRITATION PERSISTS.

Skin Contact: FLUSH THE EFFECTED AREA WITH LARGE QUANTITIES OF RUNNING WATER WHILE REMOVING CONTAMINATED CLOTHES AND SHOES. WASH CLOTHING BEFORE REUSE. GET MEDICAL ATTENTION IF IRRITATION PERSISTS.

Inhalation: REMOVE FROM CONTAMINATED AREA. IF SYMPTOMS OF RESPIRATORY DISCOMFORT PERSISTS, GET MEDICAL ATTENTION.

Ingestion: DO NOT GIVE LIQUIDS IF PERSON IS UNCONSCIOUS OR VERY DROWSY. JTHERWISE GIVE NO MORE THAN 2 GLASSES OF WATER AND INDUCE VOMITING BY TOUCHING FINGER TO BACK OF PERSONS THROAT. KEEP PERSONS HEAD BELOW HIPS WHILE VOMITING. GET MEDICAL ATTENTION.
  SECTION 9. SPECIAL PROTECTION INFORMATION
 Respiratory Protection: NO SPECIAL REQUIREMENTS UNDER NORMAL USE CONDITIONS.

Ventitation: ROOM VENTILATION IS ADEQUATE.

Protection Gloves: NO SPECIAL REQUIREMENTS UNDER NORMAL USE CONDITIONS. Eye Protection: NO SPECIAL REQUIREMENTS UNDER NORMAL USE CONDITIONS. Other Protective Clothing/Equipment: WHERE GROSS EYE OR SKIN CONTACT MAY OCCUR, USE APPROPRIATE PROTECTIVE EQUIPMENT.
   SECTION 10. ADDITIONAL INFORMATION AND PRECAUTIONS
  Handling and Storage Precautions: STORE IN A COOL DRY PLACE. REPLACE CAP AFTER USE. KEEP OUT OF REACH OF CHILDREN.
   SECTION 11. REGULATORY CLASSIFICATIONS
  Proper Shipping Name: ISOPROPANOL Hazard Class(DOT): FLAMMABLE LIQUID UN Number: 1219
NA Number: N/A
   THE INFORMATION ON THIS MATERIAL SAFETY DATA SHEET REPRESENTS THE LATEST DATA AND BEST OPINION AS TO THE PROPER USE AND HANDLING OF THIS PRODUCT UNDER NORMAL CONDITIONS. ANY USE OF THIS PRODUCT DR METHOD OF APPLICATION WHICH IS NOT IN CONFORMANCE WITH THIS DATA SHEET AND THE PRODUCT LABEL DIRECTIONS, IS THE RESPONSIBILITY OF THE USER. THIS MATERIAL SAFETY DATA SHEET WAS PREPARED TO COMPLY WITH THE OSH AMAZARD COMMUNICATION REGULATION.
```

4 ...

U.S. DEPARTMENT OF LABOR Occupational Safety and Health Administration Form Approved OMB No. 44-R1387

## MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing,

			19 (29 CFR 1915, 1918,				
	· · · · · · · · · · · · · · · · · · · ·	SECT	ION I				
Bostik Division of Emhart Corporation 312/626-4416						E NO.	
ADDRESS (Number Street, City, State, and ZIP C 2910 South 18th Avenue, Broadview CHEMICAL NAME AND SYNONYMS	ode) v . 111	inois 60	TRACE NAME			1, 1 - 11 ; 1	
Anti-Seize and Lubricating Compo	und		FORMULA				
CHEMICAL FAMILY Anti-Seize	"		PURMULA	N/A			
SECTION	J 11 1	ΗΔΖΔΕ	RDOUS INGREDIEN	T\$			
PAINTS, PRESERVATIVES, & SOLVENTS	1	TLV	ALLOYS AND MET	<del></del>	was .		TLV
PIGMENTS		(Units)	BASE METAL				(Units
CATALYST			ALLOYS		•		
VEHICLE			METALLIC COATINGS			,	
SOLVENTS			FILLER METAL PLUS COATING OR COP	E FLUX	***		
ADDITIVES			OTHERS				
OTHERS				r di Genta			
HAZARDOUS MIXTURE	S OF (	OTHER LIC	DUIDS, SOLIDS, OR GASE	•		*	TLV (Unit
	-	<del></del>				1 1	(Comp
his material does not fall within th	ie de	<u>tinition</u>	of "Hazardous Mate	erial" as g	ven in		
ection 3, Parts 1501, 1502 and 1503	3 of I	Public L	ow 85-742 Aerose	d cans mus	t not	1	To the
		199 931, 1	and the last	•			
come in contact with flame or heat			A Property of the state of the				
only to aerosol packaging Propell	ant f	or deros	ol containers is CO	2 - contain	s no fly	orod	arpoi
SEC	TIO	V III - P	HYSICAL DATA		The The	A STATE OF THE STA	
OILING POINT (*F.)	>	ю°F.	SPECIFIC GRAVITY (H2	0=1)		1.2	6@72
/APOR PRESSURE (mm Hg.)	· ·	@68 <sup>6</sup> F.	PERCENT, VOLATILE BY VOLUME (%)	e igit — se		0	
APOR DENSITY (AIR-1)		-90°F.	EVAPORATION RATE	age of the second		1	
OLUBILITY IN WATER							<b>र</b> ्ष १ (१
APPEARANCE AND ODOR Dark silver			nost no odor				
SECTION IV -	FIRI	- E AND E	XPLOSION HAZAR	D DATA	·		
to a Cha manufactural areads	<del></del>		FLANKARI F LIMITE	ew to supply	Let		Uel
50077	_0	pen Cu					
extinguishing media com, CO2, Dry Chemical — Extinguishers — lass B & C Fire Extinguishers — Wa	uish ter is	ers suita i unsuita	ble for Grease Fire ble - Material is n	c. Class R	R C	ept	rom c
rect flame at high temperature and	d flai	me is no	t persistent.				
HUSUAL FIRE AND EXPLOSION HAZARDS	d ac	etylene	gases iš advised. k	eep geros	cons	awa)	fron
lame or heat - see label on can.	<u></u>						

T(							<b>(8</b> 9° ar *
	S	ECTION V	- HEA	TH HAZARD	ATA		
THRESHOLD LIMIT Not Pertinent EFFECTS OF OVER	VALUE Oil Mist Parti	culate is 5	mg/cu	meter.			
	or pressure, no				tract irrita	ation is expec	ted.
inhalation - re	TRST AID PROCEDI Emove to fresh	ures air. Relat	ively no	fumes.			
Eyes - wash w	ith plenty of w	ater, Con	sult phy	sician,	•		
Skin - remove	by wiping. W	ash with s	oap and	water.			
	W	SECTION	VI - RI	ACTIVITY DA	TA		
STABILITY	UNSTABLE	c	ONDITION	S TO AVOID			
	STABLE	XA	wold us	with liquid o	kygen, ox	ygen gas or a	catylene go
INCOMPATABILITY	(Materials to evoid)						
HAZARDOUS DECO	MPOSITION PRODU	CTS			<del></del>	<del>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</del>	
HAZARDOUS	MAY OCCU	R		CONDITIONS TO	AVOID		
POLYMERIZATION	WILL NOT	DCCUR	X		·		
<del></del>			<del>-1</del>	· ·		<del></del>	
	SECT	ION VII -	SPILL	R LEAK PROC	EDURES		
STEPS TO BE TAKE	N IN CASE MATERI	AL IS RELEA	SED OR S	PILLED			
NI-A It LI-			-1- 16	d			
Not applicable	A AMATAFIAI IS	nor pourar	JIO. IT	propped, can t	se cleaned	WITH STOROGE	o joiyents.
WASTE DISPOSAL M	ETHOD		•		•		
	*1						
Haul away by	oll recipimers.	similar to	grease	disposal.	,·		
	SECTION	VIII - SPE	CIAL P	ROTECTION IN	FORMATI	ON	
RESPIRATORY PRO	TECTION (Specify I)	ipe)					
None required	LOCAL EXHAUST	<del></del>			SPECIAL	NI.	
	MECHANICAL /Geleads to decor	merell not n	ecessary	unless usage	OTHER	No No	
PROTECTIVE GLOV	CS .			EVE PROTECTION			
OTHER PROTECTIV	None required	for norma	al use.	None requir	ed for non	mot use.	
	TAURE TEQUITED	7 101 NOI N					
	· -			IAL PRECAUT			
No special pre	e taken in Hand Cautions. Sam	e procedu	TORING res as fo	r storing grease			
OTHER PRECAUTIO	NS	-		,	····		
None					, , , , , , , , , , , , , , , , , , , ,		
			The state of the s				

APG 224-11

Form OSHA-20

#### TEXACO INC.

### INDUSTRIAL HYGIENE, TOXICOLOGY, AND MATERIAL SAFETY DATA SHEET



NOTE: NO REPRESENTATION IS MADE AS TO THE ACCURACY OF THE INFORMATION HEREIN. SEE PAGE 7 FOR CONDITIONS UNDER WHICH DATA ARE FURNISHED.

Trade Name and Synor	nyms
00702 REGAL OI	L_R&O 68
Manufacturer's Name	Emergency Telephone No.
Texaco Inc.	(914) 831-3400 ext. 204
Address	
P.O. Box 509 B	eacon, NY 12508
Chemical Name and/or	Family or Description
Turbine Oils	
THIS PRODUCT IS CL	ASSIFIED AS: X NOT HAZARDOUS:
WARNING STATE	
	CONSIDERED NECESSARY
OCCUPATIONAL	CONTROL PROCEDURES
Protective Equipment (	
Eyes:	Chemical type goggles or face shield optional.
Skin:	Exposed employes should exercise reasonable personal cleanliness; this includes cleansing exposed skin areas several times daily with soap and water, and laundering or dry cleaning soiled work clothing at least weekly.
Inhalation:	None required if exposures are within permissible concentrations; see below.
Ventilation:	Normal
Permissible Concentrat	ions:
Air:	5 mg/cubic meter of air for mineral oil mist averaged over an 8 hour daily exposure (ACGIH, 1984-85).
EMERGENCY AND	FIRST AID PROCEDURES
first Aid Eyes:	As with most foreign materials, should eye contact occur, flush eyes with plenty of water.
Skin:	None considered necessary.
Ingestion: Inhalation: Other Instructions:	None considered necessary.  None considered necessary.
	101101

1



PHYSIOLOGICAL	EPFECTS: Coff at 00702
Effects of Exposure	
Acute:	
Eyes:	Believed to be minimally irritating.
Skin:	Believed to be minimally irritating.
Respiratory System:	Believed to be minimally irritating if not in excess of per-
	missible concentrations; see page 1.
Chronic:	N.D.
Other:	_
Sensitization Propertie	s:
Skin: Yes N	No
Median Lethal Dose (L	D <sub>50</sub> LC <sub>50</sub> )(Species)
Oral	Similar product >10 g/kg (rat); practically non-toxic
Inhalation ————	N.D. Similar product >8 g/kg (rabbit); practically non-toxic
Other	N. D.
	ation of Irritation (Species)
Skin	Similar product 0.13/8.0 (rabbit); no appreciable effect
Eves	Similar product 2.33/110 (rabbit); no appreciable effect
Symptoms of Exposu	re See above
FIRE PROTECTION	
Ignition Temp. <sup>O</sup> F.	N.D. Flash Point <sup>O</sup> F, (Method) 410 F (COC)
Flammable Limits (%)	Lower N.D. Upper N.D.
1	en Subjected to Heat or Combustion:
	Carbon monoxide, carbon dioxide, aldehydes and ketones, combus-
	tion products of nitrogen and sulfur.
Recommended Fire Ex	xtinguishing Agents And Special Procedures:
11000111110111000 1110 21	According to the National Fire Protection Association Guide, use
	water spray, dry chemical, foam, or carbon dioxide.
	Water or foam may cause frothing. Use water to cool fire-exposed
	containers. If a leak or spill has not ignited, use water spray to disperse the vapors and to provide protection for persons at-
	tempting to stop the leak.
Unusual or Explosive	
Silester of Explosive	None.
L	



ENVIRONMENTA	L PROTECTION		ode io. 00702
Waste Disposal Met	Under RCRA, it is the r determine, at the time criteria for hazardous transformations, mixtur ing material hazardous.	esponsibility of the user of disposal, whether produwaste. This is because pre, processes, etc. may ren (See Remarks for Waste Clastion Spills Call CHEMTREC (800) 42 le. Wipe up or absorb on s	ct meets RCRA oduct uses, der the result- ssification.)
Remarks:		roduct has been evaluated meet criteria of a hazardo sed form.	
PRECAUTIONS			
Minimum fe exposure t should be DOT Proper Shipping DOT Hazard Class (if	o high temperatures shou avoided.  N.A.	ures should be maintained. ld be minimized. Water co	
		N.D.	
	N.D. .8762 (H <sub>2</sub> O=1)	Vapor Pressure N.D.  Vapor Density N.D.	
Appearance and Odd	r light pale liquid	·	
pH of undiluted pro	ductN.A	Solubility N.D.	
Percent Volatile by	Volume N.D.	Evaporation N.D.	_ ( )= 1
Viscosity 64.5c	St @ 40°C	Other	
	_	. Do not occur ed below, see additional comments or ig Oxidizers Others	n page 6 for futher details) None of These X

N.D. - Not Determined < - Less Than

N.A. - Not Applicable > - Greater Than



OMPOSITION			Gride No. 007	02
Chemical/Common	Name	CAS No.	Exposure Limit	Range in %
Solvent-dewaxed stillates	heavy paraffinic petroleum di-	64742650	5.0mg/m3 TWA	95.00 - 99.99

To the best of our knowledge, none of the above listed components is hazardous according to OSHA (1910.1200) or one or more state Right-To-Know lists.



ODUCT SHIPPING LABEL

00702 REGAL OIL R&O 68

NONE CONSIDERED NECESSARY

Chemical/Common Name

CAS No. Exposure Limit Range in %

Solvent-dewaxed heavy paraffinic petroleum di- 64742650 5.0mg/m3 TWA stillates

95.00 - 99.99

To the best of our knowledge, none of the above listed components is hazardous according to OSHA (1910.1200) or one or more state Right-To-Know lists.

Flammability: 1

Reactivity: 0 Special

CAUTION: Misuse of empty containers can be hazardous. Empty containers can be hazardous if used to store toxic, flammable, or reactive materials. Cutting or welding of empty containers might cause fire, explosion or toxic fumes from residues. Do not pressurize or expose to open flame or heat. Keep container closed and drum bungs in place.

HEALTH EMERGENCY TELEPHONE: (914) 831-3400 (EXT. 204)

Texaco Inc. 2000 Westchester Avenue White Plains, New York 10650 For Additional Information Concerning:

Fuels/Lubricants/Antifreezes cell (914) 831-3400 (EXT.204) Chemicals/Additives call (409) 722-8381 Transportation Spills BALL CHEMTREC (800) 424-9300



DITH	ONAL	T.	s Balla	EAN	·c													G:	da			
Ti Si	EXACC TATE o cr	OF	TEND MIC	S TO	) CO	RIT	IÇA)	L M	ATE	H PI RIAI	ROV LS	ISIC ACT	NS (RI	OF EVI:	THE SED	TOXI 198.	C SI 5)	No		007 CON		ACT
-																						
						٠																
deterr	mine a	pplic	ability	or .	effe	t of	any	law	OF FI	egula T	tion	with	res	pect	to t	he pr	oduc:	l, use	ers she	ould d	consult	his
	T. F				re Ac	vern	nem		_				_						colo		on mat	ters.

NOTE: THIS DATA IS FURNISHED GRATUITOUSLY INDEPENDENT OF ANY SALE OF THE PRODUCT.

ONLY FOR YOUR INVESTIGATION AND INDEPENDENT VERIFICATION. WHILE THE INFORMATION IS
BELIEVED TO BE CORRECT, TEXACO INC. MAKES NO REPRESENTATION AS TO THE ACCURACY OF THE INFORMATION CONTAINED HEREIN. TEXACO INC. SHALL IN NO EVENT BE RESPONSIBLE FOR ANY DAMAGES OF WHAT—
SOEVER NATURE DIRECTLY OR INDIRECTLY RESULTING FROM THE PUBLICATION OR USE OF OR RELIANCE
UPON DATA CONTAINED HEREIN. NO WARRANTY, EITHER EXPRESS OR IMPLIED OF MERCHANTABILITY OR
FITNESS OF ANY NATURE WITH RESPECT TO THE PRODUCT OR TO THE DATA HEREIN IS MADE HEREUNDER.
DATA SHEETS ARE AVAILABLE FOR ALL TEXACO PRODUCTS. YOU ARE URGED TO OBTAIN DATA SHEETS FOR
ALL TEXACO PRODUCTS YOU BUY, PROCESS, USE, OR DISTRIBUTE, AND ENCOURAGED TO ADVISE ANYONE
WORKING WITH OR EXPOSED TO SUCH PRODUCTS OF THE INFORMATION CONTAINED HEREIN.

## EXPLANATION OF THE INDUSTRIAL HYGIENE, TOXICOLOGY, AND MATERIAL SAFETY DATA SHEET

PRODUCT INFORMATION

Trade Name and Synonyms

Refer to the code number and name under which the product is marketed and the common commercial name of the product.

Manufacturer's Name and Address Self explana-

Chemical Name and/or Family or Description

Refer to chemical, generic, or descriptive name of single elements and compounds.

For purposes of this form, a product is defined as hazardous if it possesses one or more of the following charateristics: (1) has a flash-point below 200 degrees Farenheit, closed cup or subject to spontaneous heating; (2) has a threshold limit value below 500 ppm gases and vapor below 5 mg/m<sup>3</sup> for dust, fumes and mist, and below 25 MPPCF for mineral dust; (3) a single dose oral LD50 below 500 mg/kg; (4) causes burns to the skin in the short-term exposure or is systemically toxic by skin contact; (5) has been demonstrated to be a skin or eye irritant or causes respiratory irritation; (6) may cause skin or respiratory sensitization; (7) has teratogenic, mutagenic or other toxic effects; (8) may cause asphyxia or pneumoconiosis; (9) in the course of normal operations may produce dusts, gases, fumes, vapor, mist, or smoke which have one or more of the above characteristics; (10) contains a component which may be carcinogenic according to NTP (National Toxicology Program), IARC (International Agency for Research on Cancer), OSHA (Occupational Safety and Health Administration), EPA (Environmental Protection Agency) and/or NCI (National Cancer Institute.); (11) has a median LC50 in air of 200 ppm or less by volume of gas or vapor, or 20 mg/l or less of mist, fume or dust when administered by inhalation.

OCCUPATIONAL CONTROL PROCEDURES

(Consult your Industrial Hygienist or Occupational Health Specialist.)

Protective Equipment

Type of protective equiment that is necessary for the safe handling and use of this product.

Ventilation

Normal means adequate to maintain permissible concentrations. Ventitation: type, i.e. local exhaust, mechanical, etc.

Permissible Concentrations

Indicates Threshold Limit Value (TLV) and/or Time Weighted Average (TWA) as established by the American Conference of Governmental Industrial Hygienists and/or standards promulgated by the Occupational Safety and Health Administration.

EMERGENCY AND FIRST AID PROCEDURES

Administer first aid and emergency procedures in case of eye and/or skin contact, ingestion and inhalation.

PHYSIOLOGICAL EFFECTS

Acute Exposures (Eye, Skin, Respiratory System)

Refers to the most common effects that would be expected to occur from direct contact with the product.

Chronic

Refers to the effects that are most likely to occur from repeated or prolonged exposure.

Sensitizer

Means a substance which will cause on or in normal living tissue, through an allergic or photodynamic process, a hypersensitivity which becomes evident on reapplication of, or exposure to, the same substance.

Median Lethal Dose or Concentration (LD50,LC50)

Refers to that dose or concentration of the material which will produce death in 50 per cent of the animals. For inhalation, exposure time is indicated

Irritation Index

Refers to an empirical score (Draize Method) for eye and skin irritation which tested by the method described. If numbers are not available, a yes or no answer indicates whether or not the material is an irritant.

FIRE PROTECTION INFORMATION

Ignition Temperature

Refers to the temperature in degrees. Farenheit, at which a liquid, will give off enough flammable vapor to ignite, and burn continuously for 5 sections.

Flash Point (State Method used)

Refers to the temperature in degrees Farenheit, at which a liquid will give off enough flammable vapor to ignite.



#### Flammable Limits

Refers to the range of gas or vapor concentration (percent by volume in air) which will burn or explode if an ignition source is present. Lower means the the lower flammable limit and upper means the upper flammable limit given in percent.

Products Evolved When Subjected to Heat or Combustion.

The products evolved when this material is subjected to heat or combustion, includes temperature at which oxidation or other forms of degradation occurs.

Recommended Fire Extinguishing Agents and Special Procedures

Specifies the fire fighting agents that should be used to extinguish fires. If unusual fire hazards are involved or special procedures indicated, this is specified.

Unsusual Fire or Explosive Hazards

Specifies hazards to personnel in case of fire, explosive danger.

#### **ENVIRONMENTAL PROTECTION**

Specifies how this product can be successfully disposed of,

Indicates precautions necessary in the event that leakage or breakage occurs. Included are (a) clean-up procedures, (b) personal protective equipment if necessary, (c) hazards that may be created, i.e. fire, explosion, etc.

#### PRECAUTIONARY LABEL

Label that is required or recommended.

Requirements for Transportation, Handling and Storage

Specifies handling and storage procedures. Gives ICC, DOT, or other regulations related to safety and health for transportation.

CHEMICAL AND PHYSICAL PROPERTIES

Boiling Point (or Range)

In degrees Farenheit or Celsius Boiling Point at 760 mmHq.

Vapor Pressure

Pressure exerted when a solid or liquid is in equilibrium with its own vapor.

#### Specific Gravity

The ratio of the density of the product to the density of water.

Vapor Density

The ratio of the density of the vapor at saturation concentration (20 degrees Celsius or 68 degrees Farenheit) to the density of air at 760 mmHg.

Appearance and Odor

Refers to the general characterization of the material, e.g. powder, colorless liquid, aromatic odor, etc.

рH

Refers to the degree of acidity or basicity of the material in a specific concentration.

pH1-5 - STRONGLY ACIDIC pH5-7 - WEAKLY ACIDIC pH7-9 - WEAKLY BASIC pH9-14 - STRONGLY BASIC

#### Solubility

Refers to the solubility of a material by weight in water at room temperature. The term negli-gible, less than 0.1 %; slight, 0.1 to 1%; moderate, 1 to 10%; appreciable, 10% or greater. Gives solubility in organic solvents where appropriate.

Percent Volatile By Volume

Refers to the amount volatized at 20 degrees Celsius or 68 degrees Farenheit when allowed to evaporate.

#### Evaporation

Gives the rate of evaporation compared to a standard

Viscosity

Measure of flow characteristics in Kinematic viscosity in Centistokes.

Hazardous Polymerization

Hazardous polymerization is that reaction which takes place at a rate which produces large amounts of energy. Indicates whether it may or may not occur and under what storage conditions.

Does the Material React Violently

Indicates whether the material will react violently, releasing large amounts of energy when exposed under conditions listed.

Composition

Components of the product as manufactured.

Texaco Inc. 2000 Westchester Avenue White Plains, New York 10650 Phone (914) 831-3400 (Beacon)

## U.S. DEPARTMENT OF LABOR Occupational Safety and Health Administration

Form Approved OMB No. 44-R1367

F ·11/85

		SECT	ION I					
MANUFACTURER'S NAME	· · · · · · · · · · · · · · · · · · ·	EMERGENCY TELEPHONE NO.						
Change direct Sangtation S	ys to	no . I	nc. 4 (617) 27	3-2020		or_		
ADDRESS (Number, Street, City, State, and ZIP Co 141 Middlesex Trunpike, B	ode)		(410) 6	31-9741		,		
CHEMICAL NAME AND SYNONYMS	ur I	INGTOR	TRADE NAME AND SYNON	IYM5	*			
P-Dichlorlbenzene		<del></del>	SSS Deodora	nt Blo	cks	· ·		
		····				·		
SCOTION SCOTION			POLIC INCOLOURNES	<del></del>		<del></del>		
SECTION	1 11 -		DOUS INGREDIENTS	·				
PAINTS, PRESERVATIVES, & SOLVENTS	*	TLV (Units)	ALLOYS AND METALLIC COAT	INGS	*	TLV (Units)		
PIGMENTS			BASE METAL					
CATALYST			ALLOYS					
VEHICLE			METALLIC COATINGS					
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX					
ADDITIVES Perfumes	2.5	-	OTHERS					
отнекs p-Dichlorobenzene 9	7.	75						
						TLV		
MAZARDOUS MIXTURE	S UP	DIREK LIL	UIDS, SOLIDS, OR GASES		*	(Units)		
				j	- 1			
<del></del>						•		
			<del></del>					
				,				
-	_	<del>-</del> "						
SEC	TIO	N III - P	HYSICAL DATA			,		
BOILING POINT (°F.)	,	45	SPECIFIC GRAVITY (H20=1)		,	240 5		
VAPOR PRESSURE (mm Hg.)		@100°	PERCENT, VOLATILE BY VOLUME (%)			<del></del>		
VAPOR DENSITY (AIR=1)	<del>-  ′ °</del>	E TOO	EVAPORATION RATE		חנו	Knowr		
VAPOR DENSITY (AIR-1)	5		(=1)	·	Ai	r_Sol		
SOLUBILITY IN WATER	د له	00am.	· · · · · · · · · · · · · · · · · · ·					
			1.8			· · · · · · · · · · · · · · · · · · ·		
APPEARANCE AND ODOR White		بن قصا						
APPEARANCE AND ODOR White - arc	,,,,,							
		E AND E	XPLOSION HAZARD DATA					
SECTION IV -	FIR	<del></del>	XPLOSION HAZARD DATA	Lel		Uel		
SECTION IV -  FLASH POINT (Method used)  165 F	FIR	<del></del>	FLAMMABLE LIMITS	Lei Inknowr	_ u	Uei nknov		
FLASH POINT (Method used)  165 F <sup>C</sup> EXTINGUISHING MEDIA	FIR		FLAMMABLE LIMITS		بن ا			
SECTION IV -  FLASH POINT (Method used)  165 FC  EXTINGUISHING MEDIA  Vater - foam - CO - Ary of special fire fighting procedures	FIR COC	ical	FLAMMABLE LIMITS		111			
SECTION IV - FLASH POINT (Method used)  165 FC EXTINGUISHING MEDIA	FIR COC	ical	FLAMMABLE LIMITS		<u></u>			

PAGE (1)

(Continued on reverse side)

Form OSHA-20

	:	SECTION	V - HEALTH HAZAR	D DATA
THRESHOLD LIMIT	T VALUE		· · · · · · · · · · · · · · · · · · ·	
EFFECTS OF OVER	EXPOSURE 75	ppm		
	ir	ritatio	n to eyes	
EMERGENCY AND	FIRST AID SECCE	NIBES	W**	
Flush eye	s with ple	nty of	water and get m	edical attention if
ill effec	ts develop	·		
			·	
	·	SECTIO	NVI - PEACTIVITY	DATA
STABILITY	UNSTABLE		CONDITIONS TO AVOID	
	STABLE	. [		
INCOMPATABILITY	(Materials to avoid,	<del></del>		
HAZARDOUS DECC	OMPOSITION PROD	UCTS		
			CONDITIONS	TO AVOID
HAZARDOUS POLYMERIZATION				
	WILL NOT	OCCUR	x	
			- SPILL OR LEAK PR	OCEDURES
STEPS TO BE TAKE	EN IN CASE MATE	RIAL IS RELE	ASED OR SPILLED	
Does not	apply			\$
	<u>upp 1 1</u>			
WASTE DISPOSAL	METHOD			
<del></del>	· · · · · · · · · · · · · · · · · · ·		· <u> </u>	
		····		·
	•			
	CECTION	NAZIO SI	DECLAI PROTECTION	LINEOPMATION
	:		PECIAL PROTECTION	INFORMATION
RESPIRATORY PRO	OTECTION (Specify	type)	PECIAL PROTECTION	
	:	type)	PECIAL PROTECTION	SPECIAL
	OTECTION (Specify	type)	PECIAL PROTECTION	SPECIAL
VENTILATION	LOCAL EXHAUS	type)	PECIAL PROTECTION	SPECIAL OTHER None of these
VENTILATION PROTECTIVE GLOV	LOCAL EXHAUS MECHANICAL (	type)		SPECIAL OTHER None of these
VENTILATION PROTECTIVE GLOV	LOCAL EXHAUS MECHANICAL (	type)		SPECIAL OTHER None of these
VENTILATION PROTECTIVE GLOV	LOCAL EXHAUS MECHANICAL (I	Type) ST General)	EYE PROTECT	SPECIAL OTHER None of these
RESPIRATION PROTECTIVE GLOV	LOCAL EXHAUS MECHANICAL (C	Type) ST General) SECTION	EYE PROTECTION OF THE CA	SPECIAL OTHER None of these
VENTILATION PROTECTIVE GLOV	LOCAL EXHAUS MECHANICAL (I	Type) ST General) SECTION	EYE PROTECTION OF THE CA	SPECIAL OTHER None of these
PROTECTIVE GLOV OTHER PROTECTIV	LOCAL EXHAUS  MECHANICAL (I  VES  VE EQUIPMENT  BE TAKEN IN HAI	Type) ST General) SECTION	EYE PROTECTION OF THE CA	SPECIAL OTHER None of these

PAGE (2)

Form OSHA-20 Rev. May 72

## **Material Safety Data Sheet**

CARBON DIOXIDE

QUICK IDENTIFIER Common Name: (used on label and list)

May be used to comply with OSHA's Hazard Communication Standard, 29CFR 1910. 1200. Standard must be consulted for specific requirements.

SECTION 1 -					
Manufucturer's			w		
Name AMERIX CORPORATION		1.1			
P. O. Box 81		Emergency Telephone No.	205/655-3271		
Sity, State, and ZIP		Other Information			
TRUSSVILLE, AL 35173-0081		Calls	205/655-3271		
Signature of Person Responsible for Preparation (Optional)  D. H. Ellison		Date Prepared	November 1985		
SECTION 2 – HAZARDOUS INGREDIENTS	S/IDENTITY				
Hazardous Component(s) (chemical & common name(s))	OSHA PEL	ACGIH TLV	Other Exposure Limits	% (optional)	CAS NO.
Carbon Dioxide	Unknown	5000 ppm	Unknown	100 1	124-38-9
SECTION 3 - PHYSICAL & CHEMICAL CHAP	Specific		Vарог		
Point At 1 ATM -109°F  Vapor Density (Air == 1) 1.52	Gravity (H <sub>2</sub> O=1)	N.A.	Pressure (mm Hg	'At 70°F (	<u>as</u>
Solubility in Water At 70°F 1 ATM 0.8 V/V H <sub>2</sub> 0	Reactivity in Water	N.A.			
Appearance and Odor N.A.	Melting Point	N.A.			
SECTION 4 – FIRE & EXPLOSION DATA					
	mmable Limits LEL Air % by Volume Lower	N.A.	UEL <sup>Upper</sup> N.A.		
Auto-Ignition Extinguisher Temperature N.A. Media N.A	·				
Special Fire Fighting Procedures N.A. This material is a fire	fighting agent.				
Unusual Fire and					
Explosion Hazards N.A.		<del></del>			

Addical Conditions Generally aggravated by Exposure N. Chemical Listed as Carcinogen r Potential Carcinogen	HAZARDS				lyze respiratory cer ciousness and death	
Incompatability Materials to Avoid)  Incompatability Materials to Avoid)  Incomposition Products Incomposition Products May Occur       Will Not Occur     Will Not O	None Conditions to Avoid N.A.  HAZARDS	Hi				
Inzardons Decomposition Products Inzardous Indexerdous Indexerdous Indexerdous Will Not Occur  Increase Increa	None Conditions to Avoid N.A.  HAZARDS  ed inhalation will	Hi				
BECTION 6 - HEALTH Acute N.A.  Igns and ymptoms of Exposure result.  Increase result.  Increase result.	Conditions to Avoid N.A.  HAZARDS	Hi				
BECTION 6 - HEALTH Acute N.A.  Igns and ymptoms of Exposure result.  Increase result.  Increase result.	Conditions to Avoid N.A.  HAZARDS	Hi				
SECTION 6 - HEALTH  Acute  N.A.  igns and ymptoms of Exposure fedical Conditions Generally ggravated by Exposure  N.A.  hemical Listed as Carcinogen r Potential Carcinogen	to Avoid N.A.  HAZARDS  ed inhalation wil	Hi				
N.A.  igns and Increase ymptoms of Exposure result.  Indical Conditions Generally aggravated by Exposure N.  Chemical Listed as Carcinogen r Potential Carcinogen	HAZARDS	Hi				
N.A.  igns and Increase result.  fedical Conditions Generally ggravated by Exposure N.  hemical Listed as Carcinogen r Potential Carcinogen	ed inhalation wil	Hi				
Acute N.A.  Igns and Increase result.  Iedical Conditions Generally ggravated by Exposure N.  hemical Listed as Carcinogen Potential Carcinogen	ed inhalation wil	Hi				
gns and Increase result.						
ymptoms of Exposure result.  Iedical Conditions Generally ggravated by Exposure N.  Chemical Listed as Carcinogen r Potential Carcinogen		il cause increas	sed breath	ing rate. Unconso	ciousness and death	ma y
Iedical Conditions Generally ggravated by Exposure N., hemical Listed as Carcinogen r Potential Carcinogen	1.					
ggravated by Exposure N. Chemical Listed as Carcinogen r Potential Carcinogen	1.					
Thenneal Listed as Carcinogen r Potential Carcinogen	1.					
r Potential Carcinogen						
r Potential Carcinogen	N	sianlarus Van II	1 4	u C Van D	OCHA V	
	National Tox Program	ricology Yes U No MXI	· Mor	R.C. Yes Diographs No K	OSHA Yes .) No l≩	
mergency and irst Aid Procedures See bel						
4. Ingestion	.A. .A.					
SECTION 7 - SPECIAL	PRECAUTIONS	S AND SPILL/	LEAK PE	ROCEDURES		
recautions to be Taken in Handling and Storage						
7	torage in ventil	ated area recom	menaea.			
Other						
Y	.A <u>.</u>					
Steps to be Taken in Case Material is Released or Spilled						
	.A.					
Waste Disposal						
Methods (Consult federal, state, an	d local regulations) N	I_A_				
SECTION 8 - SPECIA	L PROTECTIO	N INFORMA	rion/co	NTROL MEASU	RES	
Respiratory Protection				**************************************		
	belf contained	Mechanical		Special	Other	
	Exhaust Yes	(General)	Yes	No	No .	
Protective Gloves Optional			ye rotection	Safety glasses		
Other Protective				odicky dinascs		
Clothing or Equipment N.A						

## **Material Safety Data Sheet**

HALON 1211
QUICK IDENTIFIER
Common Name: (used on label and list)

May be used to comply with OSHA's Hazard Communication Standard, 29CFR 1910, 1200, Standard must be consulted for specific requirements.

SECTION 1 -	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			<del></del>
Manufacturer's Name AMEDEY CODDODATION		·		<del></del>
Address		Emergency Tolombono No.		
P. O. Box 81 City, State, and ZIP		Other	205/655-3271	
TRUSSVILLE, AL 35173-0081		Information Calls	205/655-3271	
Signature of Person Responsible for Preparation (Optional) D. H. Ellison		Date Prepared	November 1985	<del></del>
SECTION 2 – HAZARDOUS INGREDIENTS/I	DENTITY			
Hazardous Component(s) (chemical & common name(s))	OSHA PEL	ACGIH TLV	Other Exposure Limits	% CAS (optional) NO.
Bromochlorodifluoromethane	Unknown	Not Listed	1000 ppm on 8 HR TWA	100 353-59-3
SECTION 3 - PHYSICAL & CHEMICAL CHARA				
Boiling   Point   26°F	Specific Gravity (H <sub>1</sub> O=1)	1.83(liqu	Vapor Pressure (mm Hg	at 68°F 1770
Solubility in Water Insoluble	Reactivity in			
Appearance and Odor Sweet odor.	nt, Melting	N.A.		
SECTION 4 – FIRE & EXPLOSION DATA				
Flash Method Flam	mable Limits LEL r % by Volume Lower	N.A.	UEL Upper N.A.	
Auto-Ignition Extinguisher Temperature N.A. Media N.A.				
Special Fire Fighting Procedures At flame temperatures, Halon 121	l may release hy	drogen ha	lides and halogens	in trace
amounts.				
Unusual Fire and Explosion Hazards When BCF is discharged into a fi	re, it decompose	es above 9	00°F, releasing br	omide ions.
Halongen acids and small amounts of carbonyl hal	ides are also fo	rmed. The	ese by-products, a	lthough
harmful if inhaled, are easily detected. Only a	few PPM create	an unplea:	sant, acrid odor w	hich serves
as a warning to the user. After the extinguisher	r is discharged	the area	should be vacated	until
ventilation clears the atmosphere.				

Active metals such as powdered alumina and magnesium and fires of metal hydrides.  Harmone May door Conditions Biomerication Will Middle Cory Conditions Biomerication Will Middle Conditions	Stability Unstable . (	Conditions
Becombined the product   Bellin   Bel	Incompatability	
Management   Man	Materials (o Avoid) A	ctive metals such as powdered alumina and magnesium and fires of metal hydrides.
Acute	Decomposition Products  Tazardous May	acids, and small amounts of carbonyl halides.
Acute   Unknown   2 Chronic   Prolonged exposure can cause dizziness, headache, no impaired coordination, progressing to unconsciousness by programs of Exposure   As above.		
Security		
Additional foods and separated in Separated		
In susceptible individuals, cardiac sensitization to circulating epinephrine compour can result in sudden, fatal heart arrhythmias.  Chemical Letted as Carcington Notional Tooleans No. 2	Signs and Symptoms of Exposure	As above.
Chemical Justed as Carringen   Program   National Toscology Yes   I.A.R.C. Yes   OSHA Yes   Program   Program   National Toscology Yes   I.A.R.C. Yes   OSHA Yes   Program   No. X   Monographs No. X   OSHA Yes   Program   No. X   Monographs No. X   OSHA Yes   Program   No. X   No. X	Aggravated by Exposure	
Program   No   Monographs No   No   No   Monographs No   No   Monographs No   No   Monographs No   No   Monographs No   Mono		udden, fatal heart arrhythmias.
Companies   Comp	Chamical Listed as Carei	power National Toxicology, Vas. 1.1 A.R.C. Yes. (1) OSHA, Yas. 1.1
ROUTES OF SET THE Institute of the properties of	Emergency and	1. 10/A1 2 2/3 26 3A3A3 and Ab3 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Security		
The liquid form of this material can produce chilling sensation and discomfort. Flush with copious amounts of water for at least 15 minutes.  Evaporation of liquid from the skin can produce chilling sensations. Skin injury does not result. Wash skin with soap and water.  Do not induce vomiting.  Give 1 or 2 glasses of warm water to drink and get medical attention.  SECTION 7 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES  Frequentions to be Taken in Case Materials litelessed or Spilled  Ventilate spill area and recover any liquid.  Waste Disposal Methods (Consult federal, state, and local regulations)  Not applicable.  SECTION 8 - SPECIAL PROTECTION INFORMATION/CONTROL MEASURES  Responsive Special Special Special Selection Not normally needed. If needed, use MSHA/NIOSH approved respirator for organic vapors. Special Special Selection (General) Yes Special No No No No Protective (General) Yes Special No No No No Protective (General) Yes Special No No No No Protective (General) Yes Safety glasses  Eye wash station and safety shower in work area when working with liquified product.	1. Inha	
Flush with copious amounts of water for at least 15 minutes.  Evaporation of liquid from the skin can produce chilling sensations. Skin injury does not result. Wash skin with soap and water.  Do not induce vomiting. Give 1 or 2 glasses of warm water to drink and get medical attention.  SECTION 7 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES  Prevautions to be Taken in Case. Materials Released or Spilled  Ventilate spill area and recover any liquid.  Waste Desposal Methods (Consult Redeval, state, and local regulations)  Waste Desposal Methods (Consult Redeval, state, and local regulations)  SECTION 8 - SPECIAL PROTECTION INFORMATION/CONTROL MEASURES  Regulators Postectors Ventilation  Yes  Local Kechanical Yes Exhaust Yes  (General) Yes No Other Protective Chains (Experiment)  Eye wash station and safety shower in work area when working with liquified product.	BOTTER 2. Eye	is difficult, give oxygen.  The liquid form of this material can produce chilling sensation and discomfort.
does not result. Wash skin with soap and water.  Do not induce vomiting. Give 1 or 2 glasses of warm water to drink and get medical attention.  SECTION 7 SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES  Precautions to be Taken in Handling and Storage Store in cool area with good ventilation. Enforce "NO SMOKING" rules in area of use.  Other Prevautions None  Steps to be Taken in Case Material is Released or Spilled Ventilate spill area and recover any liquid.  Waste Disposal Methods (Consult Federal, state, and local regulations) Methods (Consult Federal, state, and local regulations) Not applicable.  SECTION 8 - SPECIAL PROTECTION INFORMATION/CONTROL MEASURES  Responders Protection Not normally needed. If needed, use MSHA/NIOSH approved respirator for organic vapors.  Special Type  Ventilation Yes Exhaust Yes Mechanical (General) Yes Protective Chates Impervious for liquid exposure.  Eye wash station and safety shower in work area when working with liquified product.	OF }	Flush with copious amounts of water for at least 15 minutes.
Give 1 or 2 glasses of warm water to drink and get medical attention.  SECTION 7 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES  Precautions to be Taken in Case Material is Released or Spilled  None  Steps to be Taken in Case Material is Released or Spilled  Waste Disposal Methods (Consult federal, state, and local regulations)  Not applicable.  SECTION 8 - SPECIAL PROTECTION INFORMATION/CONTROL MEASURES  Forgunators Protection Not normally needed. If needed, use MSHA/NIOSH approved respirator for organic vapors. Special Type  Ventilation Yes Exhaust Yes (General) Yes No No No  Protective Charles (Impervious for liquid exposure. Eye wash station and safety shower in work area when working with liquified product.	ENTRI /	does not result. Wash skin with soap and water.
Procedutions to be Taken in Handling and Storage   Store in cool area with good ventilation. Enforce "NO SMOKING" rules in area of use.  Other Precautions   None    Steps to be Taken in Case Material is Released or Spilled   Ventilate spill area and recover any liquid.  Waste Disposal Methods (Consult federal, state, and local regulations)   Not applicable.  SECTION 8 - SPECIAL PROTECTION INFORMATION/CONTROL MEASURES  Respirators Protection   Not normally needed.   If needed, use MSHA/NIOSH approved respirator for organic vapors. Special Typed   Ventilation   Local   Mechanical   Special   Other   Ves   Exhaust   Yes   No   No   No    Protective Charles   Impervious for liquid exposure.   Eye wash station and safety shower in work area when working with liquified product.	1	Give 1 or 2 glasses of warm water to drink and get medical attention.
Other Processions None  Steps to be Taken in Case Material is Released or Spilled Ventilate spill area and recover any liquid.  Waste Disposal Methods (Consult federal, state, and local regulations) Not applicable.  SECTION 8 - SPECIAL PROTECTION INFORMATION/CONTROL MEASURES  Respirators Protection Not normally needed. If needed, use MSHA/NIOSH approved respirator for organic vapors. Special Type:  Ventilation Yes Exhaust Yes (Generall Yes No No No Protective Charling or Equipment Eye wash station and safety shower in work area when working with liquified product.	SECTION 7 - SP	ECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES
Steps to be Taken in Case Material is Released or Spilled   Ventilate spill area and recover any liquid.  Waste Disposal Methods (Consult federal, state, and local regulations)   Not applicable.  SECTION 8 - SPECIAL PROTECTION INFORMATION/CONTROL MEASURES  Respirators Protection   Not normally needed. If needed, use MSHA/NIOSH approved respirator for organic vapors. Special   Yes   Section   Yes   Y	in Handling and Storage	
Steps to be Taken in Case   Material is Released or Spilled   Ventilate spill area and recover any liquid.		
Waste Disposal Methods (Consult federal, state, and local regulations)  Not applicable.  SECTION 8 - SPECIAL PROTECTION INFORMATION/CONTROL MEASURES  Respirators Protection   Not normally needed.   If needed, use MSHA/NIOSH approved respirator for organic vapors.   Special Type:  Ventilation   Local   Mechanical   Special   Other   Yes   Exhaust   Yes   Mo	Decorations 4	ne
Waste Disposal Methods (Consult federal, state, and local regulations)  Not applicable.  SECTION 8 - SPECIAL PROTECTION INFORMATION/CONTROL MEASURES  Respirators Protection   Not normally needed.   If needed, use MSHA/NIOSH approved respirator for organic vapors.   Special Type:  Ventilation   Local   Mechanical   Special   Other   Yes   Exhaust   Yes   Mo		
Waste Disposal Methods (Consult federal, state, and local regulations)  Not applicable.  SECTION 8 - SPECIAL PROTECTION INFORMATION/CONTROL MEASURES  Respirators Potentian Special Type:  Ventilation Yes Local Exhaust Yes Mechanical (General) Yes No No No Protective Gloves Impervious for liquid exposure.  Eye wash station and safety shower in work area when working with liquified product.		C. 11 1
SECTION 8 - SPECIAL PROTECTION INFORMATION/CONTROL MEASURES  Respirators Protection Specify Type:  Ventilation Yes Exhaust Yes Mechanical (General) Yes No No No Protective Gloves Impervious for liquid exposure.  Other Protective Clothing or Equipment Eye wash station and safety shower in work area when working with liquified product.		Ventilate spill area and recover any liquid.
SECTION 8 - SPECIAL PROTECTION INFORMATION/CONTROL MEASURES    Respirators Potestion   Not normally needed.   If needed, use MSHA/NIOSH approved respirator for organic vapors.	Waste Disposal	
Respirators Potestion (Specify Type)  Not normally needed. If needed, use MSHA/NIOSH approved respirator for organic vapors. Specify Type)  Ventilation Yes Exhaust Yes (General) Yes No No No No Content of the Protective Clothing or Equipment Eye wash station and safety shower in work area when working with Equified product.		d. state, and local regulations) Not applicable.
Respirators Potestion (Specify Type)  Not normally needed. If needed, use MSHA/NIOSH approved respirator for organic vapors. Specify Type)  Ventilation Yes Exhaust Yes (General) Yes No No No No Content of the Protective Clothing or Equipment Eye wash station and safety shower in work area when working with Equified product.		
Respirators Potestion (Specify Type)  Not normally needed. If needed, use MSHA/NIOSH approved respirator for organic vapors. Specify Type)  Ventilation Yes Exhaust Yes (General) Yes No No No No Content of the Protective Clothing or Equipment Eye wash station and safety shower in work area when working with Equified product.	SECTION 8 - S	PECIAL PROTECTION INFORMATION/CONTROL MEASURES
Ventilation   Yes   Local   Exhaust   Yes   Mechanical   Yes   No   No   No	Respiratory Protection	
Yes Exhaust Yes (General) Yes No No  Protective Charles Impervious for liquid exposure.  Other Protective Charles or Equipment Eye wash station and safety shower in work area when working with liquified product.		
Charles Impervious for liquid exposure.  Other Protective Charles Eye wash station and safety shower in work area when working with liquified product.	Yes	Exhaust Yes (General) Yes No No
Clothing or Equipment Eye wash station and safety shower in work area when working with liquified product.		
		Eye wash station and safety shower in work area when working with liquified product.
N.A.	Work Hygienic Practice	es



### ADVANCE CARBON PRODUCTS, INC.

171 INDUSTRIAL WAY • BRISBANE, CALIFORNIA 94005 TELEPHONE (415) 468-1670

PRODUCT:

Carbon/Graphite Grades

November, 1985

#### **I IDENTIFICATION**

CHEMICAL FAMILY: Carbon

D.O.T. HAZARD CLASSIFICATION: Inert

## II INGREDIENTS (INERT & HAZARDOUS)

INGREDIENTS/COMPOSITION

C.A.S. #

PERCENT

PEL

TLV

Carbon

7440-44-0

>99

15 mg/M3

10mg/M<sup>3</sup>

and/or

or

7782-42-5

#### III PHYSICAL DATA

Synthetic Graphite

BOILING POINT: None MELTING POINT: None

EVAPORATION RATE: 0 SOLUBILITY IN WATER: Insoluble

APPEARANCE: Grey-black solid

VOLATILE BY WEIGHT: <0.01% SPECIFIC GRAVITY: 1.9-2.2

VAPOR PRESSURE: Negligible at room temp. VAPOR DENSITY: Negligible at room temp.

ODOR: None

#### IV FIRE AND EXPLOSION DATA

FLASH POINT: None

LOWER/UPPER EXPLOSIVE LIMIT: None

EXTINGUISHING MEDIA: Water, CO<sub>2</sub>, sand EXTINGUISHING MEDIA TO **AVOID**: None

HAZARDOUS DECOMPOSITION PRODUCTS: In normal combustion, CO<sub>2</sub> and CO. SPECIAL FIREFIGHTING PROCEDURES: Self-contained breathing apparatus, as normal.

UNUSUAL FIRE AND EXPLOSION DATA: Graphite and carbon dusts are normally not explosive, but these may weakly contribute if the event is initiated by another explosive dust or gas. Graphite and carbon dusts are electrically conductive; dust accumulations may cause electrical short circuits or other electrical malfunctions.

#### V HEALTH HAZARD DATA

PERMISSIBLE EXPOSURE LIMIT (PEL): SEE SECTION II

PRIMARY ROUTE(S) OF ENTRY: Inhalation of dust.

**EFFECTS OF OVEREXPOSURE:** 

EYES: At high dust level, mechanical irritation.

BREATHING: Prolonged and repeated over-exposure may lead to benign pneumoconiosis.

SWALLOWING or SKIN: No effect.

FIRST AID:

IF IN EYES: Flush with water if irritation occurs.

IF ON SKIN, BREATHED OR SWALLOWED: None necessary.

MEDICAL CONDITIONS RECOGNIZED AS POSSIBLY AGGRAVATED BY EXPOSURE:

Individuals with pre-existing chronic respiratory impairments or with serum antitrypsin deficiency may be at increased risk of pneumoconiosis.

#### VI REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur.

STABILITY: Stable.

INCOMPATIBILITY (MATERIALS TO AVOID): None known.

#### VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Use normal housekeeping practice.

WASTE DISPOSAL METHOD: Bury in an approved landfill.

DISPOSAL MUST BE IN COMPLIANCE WITH FEDERAL, STATE & LOCAL LAWS AND REGULATIONS.

### **₹VIII PROTECTIVE EQUIPMENT TO BE USED**

RESPIRATORY PROTECTION: Use approved respirator if exposure exceeds PEL limits.

VENTILATION: Local ventilation recommended if dust level exceeds PEL limit.

PROTECTIVE GLOVES: Not required.

EYE PROTECTION: If airborne particles are produced. OTHER PROTECTIVE EQUIPMENT: None required.

#### IX SPECIAL PRECAUTIONS OR OTHER COMMENTS

None

### X REFERENCES &

ACGIH Documentation of Threshold Limit Values, current edition

NIOSH Occupational Health Guidelines
OSHA Publication 2206 (29 CFR 1910.1000)

THIS MATERIAL SAFETY DATA SHEET IS PROVIDED SOLELY FOR YOUR INFORMATION, CONSIDERATION AND INVESTIGATION. ANY USE OF THESE DATA AND INFORMATION MUST BE DETERMINED BY THE USER TO BE IN COMPLIANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS.



ABC DRY CHEMICAL

QUICK IDENTIFIER Common Name: (used on label and list)

May be used to comply with OSHA's Hazard Communication Standard, 29CFR 1910. 1200. Standard must be consulted for specific requirements.

SECTION	1 _		<del></del>					<del></del> -	
Manufacturer'		_	· · · · · ·					_	
Name	AMEREX	CORPOR	ATION			F			
Address	P. O.	Box 81				Emergency Telephone N	lo. 205/655-3271		
City, State, an	d ZIP					Other Information		<del></del> _	
		ILLE, A	L 35173-0081			Calls	205/655-3271		
Signature of P Responsible for	erson r Preparatio	n (Optiona	D. H. E11	lison		Date Prepared	November 1985		
SECTION	V 2 – HA	ZARD	ous ingri	EDIENTS/II	DENTITY				
Hazardous Cor	mponent(s) {	chemical &	common name(s)		OSHA PEL	ACGIH TLV	Other Exposure Limits	% (optional)	CAS NO.
None repo	orted to	us by a	ny suppliers	of chemical	ingredients	included in	this product.		
			<del>, , , , , , , , , , , , , , , , , , , </del>						
	<u> </u>				-		,		
			<del></del> .		·	,=		<del></del> _	
SECTION	3 - PH	YSICAL	& CHEMIC	AL CHARA	CTERISTIC	cs			
Boiling Point	N.A.				Specific Gravity (H,C	)=1) <b>0.85</b>	Vapor Pressure (mm Hg	N.A.	
			Vapor Density (Air = 1)	N.A.			-		
Solubility in Water	N.A.				Reactivity is Water	N.A.		<del>,                                    </del>	
Appearance	Yellow p	owder.	No character	istic odor.	Melting Point	N.A.			
			EXPLOSION						-
Flash Point N.A.	F. C.	Method Used	N.A.	Flamr in Air	nable Limite L % by Volume L	EL ower N.A.	UEL Upper N.A.		
Auto-Ignition Temperature			Exting Media	uisher N.A.			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
Special Fire Fighting Proc		N.A.	This material		fighting ager	nt.			
Unusual Fire Explosion Ha	and zarda	N.A.							
	,, v <u></u>		· • · • · · · · · · · · · · · · · · · ·						
		-							
	<del></del>	<u>_</u>				<u> </u>	, <u>, , , , , , , , , , , , , , , , , , </u>		

SECTION 5 - PHYSICAL HAZARDS (REACTIVITY DATA)
Stability Unstable . Conditions Stable   X to Avoid N.A.
Incompatability
Materials to Avoid Material is stable under most conditions.
Hazardous Decomposition Products Ammonia carbon monoyide and oyides of nitrogen
Hazardons May Occur II Conditions
Polymerization Will Not Occur 😨 to Avoid N.A.
SECTION 6 – HEALTH HAZARDS
1 Acute 2 Chronic  Irritation of eyes and respiratory tract. None known.
Signs and Symptoms of Exposure None known.
THE RIGHT
Medical Conditions Generally Aggravated by Exposure None known
Aggravated by Exposure None known.
Chemical Listed as Carcinogen National Toxicology Yes   I.A.R.C. Yes   OSHA Yes   MALENTIA OSHA Yes   OSHA Yes
or Potential Carcinogen Program No 🙀 Monographs No 🙀 No 📝 Emergency and
First Aid Procedures See below
\ 1 Inhalation
Unknown
ROUTES 2 Eyes  Flush with water for 15 minutes and seek medical attention.
ENTRY 3. Skin Wash with soap and water.
4. Ingestion Unknown
SECTION 7 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES
Precautions to be Taken
in Handling and Storage Store in closed, moisture free containers in a cool, dry location. Avoid
unnecessary dustiness.
Precautions Do not cross contaminate with other extinguisher agents.
Steps to be Taken in Case Material is Released or Spilled Sweep up.
Waste Disposal Methods (Consult federal, state, and local regulations)  Dry landfill.
SECTION 8 – SPECIAL PROTECTION INFORMATION/CONTROL MEASURES
Respiratory Protection
Specify Typel Dust respirator when TLV is exceeded (nuisance dust 30 MPPCF)  Ventilation Local Mechanical Special Other
Yes Exhaust Yes (General) Yes No No
Protective Eye Gloves Optional Protection Safety glasses
Other Protective Clothing or Equipment N.A.
Work/Hygienic Practices N.A.

REGULAR DRY CHEMICAL
QUICK IDENTIFIER
Common Name: (used on label and list)

May be used to comply with OSHA's Hazard Communication Standard, 29CFR 1910, 1200. Standard must be consulted for specific requirements.

SECTION 1 -					
Manufacturer's Name AMEREX CORPORATION					
Address P. O. Box 81		Emergency Telephone No	205/655-3271	<del></del>	
City, State, and ZIP  TRUSSVILLE, AL 35173-0081		Other Information Calls	205/655-3271		
Signature of Person Responsible for Preparation (Optional)  D. H. Ellison		Date Prepared	November 1985		
SECTION 2 – HAZARDOUS INGREDIENTS/IDEN	VTITY				<del></del>
Hazardous Component(s) (chemical & common name(s))	OSHA PEL	ACGIH TLV	Other Exposure Limits	% (optional)	CAS NO.
None reported to us by any suppliers of chemical ingr	redients inc	luded in t	his product.		
			******		<del></del>
***					
		_	-		
CECUTION 9 DIVICIOAL & CHEMICAL CHADACTER	an iomico		-		
	Specific Gravity (H <sub>2</sub> O=1)	0.00	Vapor Pressure (mm Hg)		
Point N.A. Vapor Density (Air = 1) N.A.	3141ty (1130 – 1)	0.90	Tressure (time rigg	N.A.	
Solubility	Reactivity in Water				——
Appearance and Odor N.A. P	Melting Point	N.A.		·	
SECTION 4 – FIRE & EXPLOSION DATA					
Flash Method Flammable in Air % by	Limits LEL Volume Lower	N.A.	UEL Upper N.A.		
Auto-Ignition Extinguisher Temperature N.A. Media N.A.					
Special Fire Fighting Procedures N.A. This material is a fire fighting	ng agent.				
Unusual Fire and Explosion Hazards N.A.					
·					

SECTION 5- PHYSIC	CAL HAZARDS (REACTIVITY DATA)					
Stability Unstable Conditi Stable <b>x</b> to Avoi						
Incompatability Materials to Avoid) — Matoria	l is stable under most conditions.					
THE LET TO	13 School while most conditions.					
Hazardous	· · · · · · · · · · · · · · · · · · ·					
Decomposition Products Sod Hazardous May Occur	dium carbonate, water and carbon dioxide  Conditions					
Polymerization - Will Not Occur						
SECTION 6 - HEAL	TH HAZARDS					
1 Acute	2. Chronic					
None Sugns and	None					
Symptoms of Exposure None	3					
Medical Conditions Generally						
Aggravated by Exposure	None known					
Chemical Listed as Carcinogen or Potential Carcinogen	National Toxicology Yes   1   I.A.H.C. Yes   1   OSHA Yes   1   Program   No 10   Monographs No 20   No 30					
Emergency and First Aid Procedures See	below.					
ي مرد						
1 Inhahrian						
ROUTES\ 2 hyes	None					
OF ENTRY 3. Skin	Flush with water for 15 minutes and seek medical attention.					
4 Ingestion	Wash with soap and water.					
	None					
SECTION 7 SPECE	AL PRECAUTIONS AND SPILL/LEAK PROCEDURES					
Precautions to be Taken in Handbug and Storage	Store in closed, moisture free containers in a cool, dry location. Avoid					
	unnecessary dustiness.					
Other Precautions	Do not cross contaminate with other extinguishing agents.					
	Do not cross containingle with time extinguishing agents.					
Steps to be Taken at Case						
Material is Released or Spilled	Sweep up.					
Waste Disposal						
Methods (Consuit federal, state	· and local regulations: Dry landfill					
SECTION 8 - SPEC	TAL PROTECTION INFORMATION/CONTROL MEASURES					
Respiratory Protection						
Ventilation	st respirator when TLV is exceeded (nuisance dust 30 MPPCF)  Local Mechanical Special Other					
Yes Protective	Exhaust Yes (General) Yes No No Eye					
Gloves Optional Other Protective	Protection Safety glasses					
Clothing or Equipment O	ptional					
Work/Hygienic Practice N	.A.					

P. K. DRY CHEMICAL

QUICK IDENTIFIER Common Name: (used on label and list)

May be used to comply with OSHA's Hazard Communication Standard, 29CFR 1910, 1200, Standard must be consulted for specific requirements.

	-							
Manufacturer's Name	AMEREX CORP	ORATION						
Address	P. O. Box 8				Emergenc Telephone	y No. 205/655-32	<del></del>	
City, State, and 2			1		Other Informatio Calls			
Signature of Pers Responsible for P					Date Prepared	November 1		
SECTION	2 – HAZAR	DOUS INGRI	EDIENTS/II	DENTITY	,			<del></del>
Hazardous Comp	onent(s) (chemica	l & common name(s)	)	OSHA PEL	A ACGIH TLV	Other Exposi Limits	ure % (optional)	CAS NO.
	None report	ed to us by an	y suppliers	of chemica	l ingredient	s included in	this	
	product.							
		······································						
						-7	- Aut	
					·····		·	
***************************************			, <u>, , , , , , , , , , , , , , , , , , ,</u>					
SECTION 3	- PHYSICA	AL & CHEMIC	Al CHARA	CTERIST	ICS.			
Boiling	- PHYSICA	AL & CHEMIC	AL CHARA	Specific		Vapor		
SECTION 3	B - PHYSICA		AL CHARA				ire (mm Hg) N.A.	
Boiling Point		Vapor Density (Air = 1)	AL CHARA	Specific Gravity (H	·O=1) 0.88		ire (mm Hg) N.A.	
Boiling		Vapor		Specific Gravity (H Reactivity Water	·O=1) 0.88		ire (mm Hig) N.A.	
Boiling Point Solubility	N.A.	Vapor Density (Air = 1)		Specific Gravity (H Reactivity Water	o.88 in		ire (mm Hig) N.A.	
Boiling Point  Solubility in Water  Appearance and Odor	N.A. Purple cold	Vapor Density (Air = 1)	N.A. teristic odor	Specific Gravity (H Reactivity Water	in N.A.		ire (mm Hig) N.A.	
Solubility in Water  Appearance and Odor  SECTION	N.A. Purple cold 4 - FIRE &	Vapor Density (Air = 1) or. No charact EXPLOSION	N.A. teristic odor	Specific Gravity (H  Reactivity Water  Melting Point	in N.A. N.A.	Pressu	- Hon.	
Solubility in Water  Appearance and Odor  SECTION  Flash PointN.A. F. Auto-Ignition	N.A. Purple cold 4 - FIRE &  C. Method Used	Vapor Density (Air = 1) or. No charact	N.A. teristic odor I DATA Flamm in Air	Specific Gravity (H Reactivity Water Melting Point	in N.A. N.A.	Pressu	nre (mm Hig) N.A.	
Solubility in Water  Appearance and Odor  SECTION  Flash Pointy, A. F.  Auto-Ignition Temperature  Special Fire	N.A. Purple cold 4 - FIRE &  C. Method Used N.A.	Vapor Density (Air = 1)  or. No charact  EXPLOSION  N.A.  Exting Media	N.A.  teristic odor  I DATA  Flamm in Air  uisher  N.A.	Specific Gravity (H  Reactivity Water  Melting Point  nable Limits % by Volume	in N.A. N.A. LEL Lower N.A.	Pressu	- Hon.	
Solubility in Water  Appearance and Odor  SECTION  Flash PointN.A. F.  Auto-Ignition Temperature	N.A. Purple cold 4 - FIRE & C. Method Used N.A.	Vapor Density (Air = 1)  or. No charact  EXPLOSION  N.A.  Exting	N.A.  teristic odor  I DATA  Flamm in Air  uisher  N.A.	Specific Gravity (H  Reactivity Water  Melting Point  nable Limits % by Volume	in N.A. N.A. LEL Lower N.A.	Pressu	- Hon.	
Solubility in Water  Appearance and Odor  SECTION  Flash Pointy, A. F.  Auto-Ignition Temperature  Special Fire	N.A. Purple colo 4 - FIRE & C. Method Used N.A.	Vapor Density (Air = 1)  or. No charact  EXPLOSION  N.A.  Exting Media	N.A.  teristic odor  I DATA  Flamm in Air  uisher  N.A.	Specific Gravity (H  Reactivity Water  Melting Point  nable Limits % by Volume	in N.A. N.A. LEL Lower N.A.	Pressu	- Hon.	
Solubility in Water  Appearance and Odor  SECTION  Flash PointN.A. F.  Auto-Ignition Temperature  Special Fire Fighting Procede  Unusual Fire an	N.A. Purple colo 4 - FIRE & C. Method Used N.A.	Vapor Density (Air = 1)  or. No charact  EXPLOSION  N.A.  Exting Media	N.A.  teristic odor  I DATA  Flamm in Air  uisher  N.A.	Specific Gravity (H  Reactivity Water  Melting Point  nable Limits % by Volume	in N.A. N.A. LEL Lower N.A.	Pressu	- Hon.	
Solubility in Water  Appearance and Odor  SECTION  Flash PointN.A. F.  Auto-Ignition Temperature  Special Fire Fighting Procede  Unusual Fire an	N.A. Purple colo 4 - FIRE & C. Method Used N.A.	Vapor Density (Air = 1)  or. No charact  EXPLOSION  N.A.  Exting Media	N.A.  teristic odor  I DATA  Flamm in Air  uisher  N.A.	Specific Gravity (H  Reactivity Water  Melting Point  nable Limits % by Volume	in N.A. N.A. LEL Lower N.A.	Pressu	- Hon.	
Solubility in Water  Appearance and Odor  SECTION  Flash PointN.A. F.  Auto-Ignition Temperature  Special Fire Fighting Procede  Unusual Fire an	N.A. Purple colo 4 - FIRE & C. Method Used N.A.	Vapor Density (Air = 1)  or. No charact  EXPLOSION  N.A.  Exting Media	N.A.  teristic odor  I DATA  Flamm in Air  uisher  N.A.	Specific Gravity (H  Reactivity Water  Melting Point  nable Limits % by Volume	in N.A. N.A. LEL Lower N.A.	Pressu	- Hon.	
Solubility in Water  Appearance and Odor  SECTION  Flash PointN.A. F.  Auto-Ignition Temperature  Special Fire Fighting Procede  Unusual Fire an	N.A. Purple colo 4 - FIRE & C. Method Used N.A.	Vapor Density (Air = 1)  or. No charact  EXPLOSION  N.A.  Exting Media	N.A.  teristic odor  I DATA  Flamm in Air  uisher  N.A.	Specific Gravity (H  Reactivity Water  Melting Point  nable Limits % by Volume	in N.A. N.A. LEL Lower N.A.	Pressu	- Hon.	

SECTION 5- PHYSIC	AL HAZARDS (REACTIVITY DATA)
Stability Unstable Condition Stable X to Avoid	
Incompatability (Materials to Avoid)	
<u>Mater</u>	ial is stable under most conditions.
Hazardous Decomposition Products No.	
Hazardous May Occur	Conditions
Polymerization Will Not Occur	X) to Avoid N.A.
- P. P. S. W.	·
SECTION 6 – HEALT	TH HAZARDS
1. Acute <b>None</b>	2. Chronic None
Signs and Symptoms of Exposure None	
Medical Conditions Generally Aggravated by Exposure N	one known
Chemical Listed as Carcinogen or Potential Carcinogen	National Toxicology Yes □ I.A.R.C. Yes □ OSHA Yes □ Program No V Monographs No V No V
Emergency and First Aid Procedures See b	
· · · · · · · · · · · · · · · · · · ·	
1. Inhalation	
ROUTES \ \( \frac{2. \text{ Eyes}}{2. \text{ Eyes}} \)	Unknown
OF ENTRY 3. Skin	Flush with water for 15 minutes and seek medical attention.
4. Ingestion	Wash with soap and water.
/	Unknown
	L PRECAUTIONS AND SPILL/LEAK PROCEDURES
Precautions to be Taken in Handling and Storage	Store in closed, moisture free containers in a cool, dry location.
	Avoid unnecessary dustiness.
Other Precautions Do not Cr	ross contaminate with other extinguishing agents.
Steps to be Taken in Case Material is Released or Spilled	Sweep up
Waste Disposal Methods (Consult federal, state, a	and local regulations) Dry landfill
ODOMEST OF CODO	AL PROTECTION INFORMATION/CONTROL MEASURES
Respiratory Protection	AL PROTECTION INFORMATION/CONTROL MEASURES
113 15 150	respirator when TLV is exceeded (nuisance dust 30 MPPCF)  Local Mechanical Special Other
Yes	Exhaust Yes (General) Yes No No
Protective Gloves Optional	Eye Protection Safety glasses
Other Protective Clothing or Equipment Opt	ional
Work/Hygienic Practices N.A.	•

# U.S. DEPARTMENT OF LABOR Occupational Safety and Health Administration

Form Approved OMB No. 44-R1387

# MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SE	CTION I			
MANUFACTURER'S NAME ARMITE LABORATORIE	ES	EMER 2	GENCY TELEPHONE	NO.
ADDRESS (Number, Street, City, State, and ZIP Code) 1845	RANDOLPH	STREET, LOS	ANGELES, CA.	90001
CHEMICAL NAME AND SYNONYMS SPEC. MIL-A-907	QPL	TRADE NAME		
CHEMICAL FAMILY	FORMULA			

SECTIO	NH -	HAZA	RDOUS INGREDIENTS		
PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	×	TLV (Units)
PIGMENTS			BASE METALMETALLIC LEAD POWDER	70	
CATALYST			ALLOYS (CAS # 7439-92-1)		
VEHICLE PARAFINE BASE	22		METALLIC COATINGS		e e
SOLVENTS PETROLEUM OIL SAE 40		·	FILLER METAL PLUS COATING OR CORE FLUX		: "#** ***
ADDITIVES			OTHERS		
OTHERS PETROLEUM GREASE	8				
HAZARDOUS MIXTURI	ES OF	OTHER LI	QUIDS, SOLIDS, OR GASES	*	TLV (Units)
		,	tare.	, K	
4	-		***		T.
				1	
			*		20 pt

SECTION III - PHYSICAL DATA						
BOILING POINT (°F.) MIN.	300°F	SPECIFIC GRAVITY (H2O=1)		N/A		
VAPOR PRESSURE (mm Hg.)	N/A	PERCENT, VOLATILE BY VOLUME (%)		N/A		
VAPOR DENSITY (AIR-1)	N/A	EVAPORATION RATE		N/A		
SOLUBILITY IN WATER IN	SOLUBLE		, and the state of	Nag to a car		
APPEARANCE AND ODOR	RAY - NONE					

SECTION IV -	FIRE AND	EXPLOSION HAZARD	DATA	
FLASH POINT (Method used) 404 F (207	COC COC	FLAMMABLE LIMITS	Lei	Uel
EXTINGUISHING MEDIA FOAM CO2		DRY CHEMICAL		
SPECIAL FIRE FIGHTING PROCEDURES	NONE - AS	GREASE PRODUCT		
		e a service and		
UNUSUAL FIRE AND EXPLOSION HAZARDS	IN LARGE	QUANTITY STORAGE,	WITH MAJOR	FIRE -
	FUMES MAY	BE PRESENT		

SECTION V - HEALTH HAZARD DATA				
THRESHOLD LIMIT VALUE	0.15 mg/M <sup>3</sup>			
EFFECTS OF OVEREXPOSURE	N/A			
EMERGENCY AND FIRST AID	PROCEDURES EYES, AS GREASE - WASH WELL			
BODY: REMOV	E BY WIPING, FOLLOW WITH SOAP & WATER			
INGESTION:	DO NOT INDUCE VOMITING, CALL PHYSICIAN			

			SECTIO	ON VI - RE	ACTIVITY	/ DATA			
STABILITY	UNSTABLE			CONDITIONS	CONDITIONS TO AVOID				
	STAB	SLE	х						
INCOMPATABIL	ITY (Mater	ials to avoid)							
HAZARDOUS D	ECOMPOSI'	TION PRODU	CTS BOVE T	HE MELTING	POINT.	LEAD FUMES	MAY BE EVOLVED		
HAZARDOUS		MAY OCCU				IS TO AVOID			
POLYMERIZATI	ON	WILL NOT		Х	[				

	SECTION VII - SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE	MATERIAL IS RELEASED OR SPILLED
	WIPE AS GREASE
	TAKE UP WITH CLAY, PUMICE, ETC.
WASTE DISPOSAL METHOD	ANY LARGE QUANTITY, RETURN FOR RE-PROCESSING TO DISTRIBUTUR
OR,, SMELTER,	OTHER WISE CONSULT LOCAL DISPOSAL PEOPLE

SECTION VIII - SPECIAL PROTECTION INFORMATION							
RESPIRATORY PE	ROTECTION (Specify type)		N/A				
VENTILATION	LÖÇAL EXHAUST	N/A	SPECIAL				
Ì	MECHANICAL (General)	N/A	OTHER				
PROTECTIVE GLOVES N/A			EYE PROTECTION N/A				
OTHER PROTECT	IVE EQUIPMENT N/A						

	SECTION IX - SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN	HANDLING AND STORING	·
	NORMAL - PREFER UNDER 125°F	
THER PRECAUTIONS		

PAGE (2)

Prepared by J. H. ARMINGION December 5, 1985

Form OSHA-20 Rev. May 72

#### Dear Customer.

The purpose of this letter is to inform you that the castings we sell to you contain elements that require customer notification under Section 313 of the Emergency Planning and Right to Know Act of 1986. The law requires certain manufacturers to report annual emissions of specific chemicals.

The listed elements are present in a concentration not exceeding the upper bound limits specified. Due to continued quality control and specific casting alloy chemistry ranges, the listed percentages may not reflect actual chemistry levels for some metal types.

#### The CAS #'s for the reportable elements listed are:

Chromium: 'Manganese: '

7440-47-3

Manikank

7439-96-5

Nickel:

7440-02-0

Metal types	Chemical	Max. %
10 series steels	Chromium Manganese	.30 .80
41 series steels	Chromium Manganese	1.10 .80
43 series steels	Chromium Manganese Nickel	.90 .80 2.00
86 series steels	Chromium Manganese Nickel	.60 .90 .70
CMLC, CMHC	Chromium Manganese	2.75 .95
CM30, CM35, CM40	Chromium Manganese Nickel	3.50 1.00 1.50

MNB1, MNB2, MNB3, 121L	Chromium Manganese	1.00 14.00
MNC, 1222	Chromium Manganese	2.50 14.00
61AC	Chromium Manganese	.50 7.00
HC, HD, HE, HF, HH, HK HK-40, HL, HT	Chromium Manganese Nickel	30.00 2.00 38.00
HC25, LC25, MC25, XC25, HC25Mo	Chromium Manganese Nickel	28.00 2.00 1.00
CR12	Chromium Manganese	16.00 2.00
CL30, CL35, CL40, CL45, HR12, HR13	Chromium Manganese Nickel	4.00 1.00 2.00

Please note: If you repackage or otherwise redistribute these products to customers, they also must be notified of reportable elements.

Sincerely,

Jack Scott Vice President

**Environmental Compliance** 

### RODUCT NAME

Comtra No. S C-000-002

Refer to Material Safety Data Sheet for more information.

### MANUFACTURER

Eagle Foundry Company P.O. BOX 250 EAGLE CREEK, OR 97022



### FIRE HAZARD

4. EXTREMELY DANGEROUS FIRE AND EXPLOSION HAZARD

(Red)

- 3. FIRE AND EXPLOSION HAZARD AT NORMAL TEMP
  - 2. WILL BURN AT TEMPS ABOVE 100 F
    - 1. WILL BURN AT TEMPS ABOVE 200 F
      - 0. WILL NOT BURN

-W-

USE NO

WATER

### REACTIVITY HAZARD

- HEALTH HAZARD
- EXTREME HAZARD —
  AVOID CONTACT OR
  BREATHING VAPOR
- 3. SEVERE HAZARD USE SPECIAL CLOTHING AND MASKS
- 2. HAZARDOUS USE MASKS OR SPECIAL VENTILATION
- 1. SLIGHTLY HAZARDOUS
  -- IRRITATING
- 0. NORMAL MATERIAL

(Blue) (Yellow) 0

VACATE AREA IN CASE OF FIRE

4. EXTREME HAZARD

- 3. SEVERE EXPLOSION HAZARD
- VIOLENT CHEMICAL CHANGE POSSIBLE
- 1. UNSTABLE IF HEATED
- NORMALLY STABLE

ANSI: CAUTION! WELDING, CUTTING,
OR GRINDING ON THIS CASTING WILL GENERATE
TOXIC DUST OR FUMES.

**POLYMERIZES** 

### **INGREDIENTS**

 Chromium
 10 - 52

 Cobalt
 0 - 2.5

 Iron
 Balance

 Inganese
 0.30 - 6.00

 Nickel
 10 - 72

See Material Safety Data Sheet For listing of minor ingredients.

### STORAGE AND HANDLING

No Special Precautions

MATERIAL SAFETY DATA SHEET (MSDS)

SC-000-002 REV. 2 DATE 12/17/85 CODE 15-04

CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200

"HAZARD COMMUNICATION" AND TO VARIOUS STATE

"EMPLOYEE RIGHT TO KNOW" LAWS

COPYRIGHT 1985 STEEL FOUNDERS SOCIETY OF AMERICA

SECTION I PRODU	CT IDENTIFICATION
This MSDS supplied for: Hig	h Alloyed Cast Steels
ASTM No.	ACI alloy designation (Grades)
A297/A297M-84	HE, HF, HH, HI, HK, HL, HN, HT, HU, HW, HX, HP
A351/A351M-84	CF3,CF3A, CF8, CF8A, CF3M, CF3MA, CF8M, CF8C, CF-10, CF-10M, CH8, CH10, CH20, CK20, HK30, HK40, HT30, CF10MC, CN7M, CG6MMN, CG8M
A447/A447M-84	I, II
A451-80	CPF3, CPF3A, CPF3M, CPF8, CPF8A, CPF8M CPF10, MC, CPH10, CPF8C, CPH8, CPK20 CPH20
A494/A494M-84	CY-40, CW-12MW, CW-7M, CW-2M, CW-6MC
A560/A560-84	50 Cr-50 Ni-Cb, 50 Cr-50 Ni, 60 Cr-40 Ni
A608-79	HE35, HF30, HH30, HH33, HI35, HK30, HK40, HL30, HL40, HN40, HT50, HU50, HW50, HX50
A743/A743M-84	CF-8, CG-12, CF-20, CF-8M, CF-8C, CF-16F, CH-20, CK-20, CE-30, CF-3 CF-3M, CG6MMN, CG-8M, CN-7M, CN-7MS CW-12M, CY-40
A744/A744M-84	CF-8, CF-8M, CF-8C, CF-3, CF-3M, CG-8M, CN-7M, CN-7NS, CW-12M, CY-40
Mil-S 867 A	I, II, III

#### VENDOR NAME AND ADDRESS:

# P. O. BOX 250 EAGLE CREEK, OR, 97022

(503) 637 - 3048

N/E means none established. N/A means not applicable. N/D means no data available.

2

FIRE HAZARD CLASS: HEALTH: 0 FIRE: 0 REACTIVITY: 0 THE FOURTH DIAMOND:

ANSI: CAUTION! WELDING, CUTTING, OR GRINDING ON THIS CASTING WILL GENERATE TOXIC DUST OR FUMES.

### SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Aluminum	7429-90-5	0-0.25	10 mg/cu.m	N/E
Carbon	7440-44-0	0.03-0.75	N/E	N/E
Chromium	7440-47-3	10-52	0.5 mg/cu.m	1 mg/cu.m
Chromium (VI)*			•	<del></del> -
certain insoluble form	s		0.05 mg/cu.m	N/E
Cobalt	7440-48-4	0-2.5	0.1 mg/cu.m	0.1 mg/cu.m
Columbium (same as Nio		0-1.2	N/E	N/E
Copper (As dust)	7440-50-8	0-4	1.0  mg/cu.m	1.0 mg/cu.m
(As fume)			0.2 mg/cu.m	0.1 mg/cu.m
Iron (As fume)	7439-89-6	balance	5 mg/cu.m	10 mg/cu.m
Manganese (As dust)	7439-96-5	0.30-6.00	C 5 mg/cu.m	C 5 mg/cu.m
(As fume)			l mg/cu.m	C 5 mg/cu.m
Molybdenum	7439-98-7	0-20	10 mg/cu.m	15 mg/cu.m
Nickel	7440-02-0	10-72	1 mg/cu.m	1 mg/cu.m
Nitrogen	7727-37-9	0-0.3	N/E	N/E
Phosphorus	7723-14-0	0.02-0.40	0.1 mg/cu.m	0.1 mg/cu.m
Silicon	7440-21-3	0.50-3.50	10 mg/cu.m	15 mg/cu.m
			(as nuisance	dust)
Sulfur	7704-34-9	0.02-0.35	N/E	N/E
Tantalum	7440-25-7	0-1.1	5 mg/cu.m	5 mg/cu.m
Titanium	7440-32-6	0-0.50	N/E	N/E
Tungsten	7440-33-7	0-5.25	5 mg/cu.m	N/E
Vanadium (as vanadium		0 0120	Jg/ Juli	, 2
(As dust)	1314-62-1	0-0.40	0.05 mg/cu.m	0.5 mg/cu.m
(As fume)		5 55 10	0.05 mg/cu.m	_
(IID LUMO)			oros mg/cum	orr mg/curm

C means ceiling limit. These are limits which should not be exceeded, even for a short time. All other are 8 hr Time-weighted average concentrations.

Elements having a listed percentage greater than zero will be present in all grades. Those having a value of "0" may not be present in certain grades. Refer to Steel Founders' Society of America "Steel Castings Handbook" Supplement 2 for specifications on a particular ASTM alloy and grade.

Water insoluble hexavalent chromium is classified as a human carcinogen by the American Conference of Governmental Industrial Hygienists (ACGIH). Approximately 66% of the total chromium in welding fume is hexavalent, and only 5% of that is insoluble. Overexposure to hexavalent chromium is not likely if general welding fume is controlled. (The alloy and its dust does not contain insoluble hexavalent chromium.)

N/E means none established. N/A means not applicable.

N/D means no data available.

#### SECTION III - OVERVIEW

There are no chemical hazards from these castings in solid form.

Machining, grinding, flame cutting, or welding on the casting will put contaminants in the air. Since the casting contains mostly chromium and/or nickel, most of the airborne contaminants will be chromium and nickel dust and fume.

Welding or flame cutting may convert a fraction of the chromium to the water insoluble hexavalent (carcinogenic) form.

Some forms of nickel have been found to cause cancer in animals. One form, nickel subsulfide, which was present in an old smelting process no longer used, apparently caused nasal cancer in humans. Since then, studies have shown that the potential for ordinary forms of nickel and its oxides to cause cancer in humans is very weak, if it exists at all.

Because of this potential hazard from metal dust and fumes, machining, grinding, welding operations, etc, should be done under local exhaust ventilation. If ventilation is not adequate, wear a NIOSH approved dust and fume respirator.

Grinding on castings that have not been cleaned or that contain embedded sand may generate significant amounts of dust containing free silica, which can cause silicosis. The use of ventilation for control of metal dust and fume will also control airborne silica.

The other metals in high alloy steel castings are present in small amounts compared to the nickel and chromium. If airborne concentrations of chromium and nickel are controlled to levels below their respective TLVs and PELs, these minor constituents would also be adequately controlled.

#### SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Solid, silver gray in color, no odor

BOILING POINT: variable depending on casting grade

VAPOR PRESSURE: N/A
WADOR DENSITY: N/A

VAPOR DENSITY:

SOLUBILITY IN WATER: N/A

SPECIFIC GRAVITY: 8.9 for nickel

PERCENT VOLATILE BY VOLUME: N/A

EVAPORATION RATE: N/A

SECTION V - FIRE AND EXPLOSION DATA

Castings will not burn or explode.

#### SECTION VI - HEALTH HAZARD DATA

EYES: Metal particles in the eyes may cause irritation if not

SKIN: None known.

BREATHING: Breathing high concentrations of chromium and/or nickel dust or fume may cause deep lung irritation. Some forms of these metals can cause cancer; refer to the Overview of this MSDS.

Breathing excessive amounts of silica dust for a long time can cause silicosis. Silicosis causes shortness of breath, reduced capacity to do work, and weakens the defenses against other lung diseases.

SWALLOWING: N/A

NOISE: Grinding or machining castings is noisy. The OSHA limit for noise averaged over 8 hours is 90 decibels (dBA), hearing conservation program required if exposure is over 85 dBA. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

IF IN EYES: Metal particles should be removed by trained individuals such as a nurse or physician.

IF ON SKIN: N/A

IF BREATHED: (Fumes from welding): Move to fresh air.

IF SWALLOWED: N/A \_\_\_\_\_\_

#### SECTION VII - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur.

STABILITY: Stable.

INCOMPATIBILITY: Chromium metal dust may burn or explode when in contact with Ammonium Nitrate.

\_\_\_\_\_\_\_\_\_\_\_

SECTION VIII - SPILL OR LEAK PROCEDURES

### STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

If damaged, return castings to vendor or send to scrap reclaimer.

Collected dust from machining, welding, etc. may be classed as a "hazardous waste" depending on circumstances. Consult local authorities regarding disposal.

#### SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: Wear a NIOSH approved respirator for dusts or fume if concentrations exceed the TLV or PEL. VENTILATION: Provide general ventilation and/or local exhaust if necessary to maintain concentrations below the TLVs.

PROTECTIVE GLOVES: Work gloves advisable for handling castings.

EYE PROTECTION: Safety glasses with side shields and/or face shields for particles (grinding). Welding goggles or helmet for welding.

OTHER PROTECTIVE EQUIPMENT: Wear a protective apron and gauntlets if arc-air gouging or cutting, or welding on castings.

N/A means not applicable.

N/E means none established. N/D means no data available. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: No special precautions.

INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE RELIABLE AND IS ACCURATE AND RELIABLE TO THE BEST OF OUR KNOWLEDGE AND BELIEF BUT IS NOT GUARANTEED TO BE SO.

# U.S. DEPARTMENT OF LABOR Occupational Safety and Health Administration



# MATERIAL SAFETY DATA SHEET

	SECTION	ir.		
MANUFACTURER'S NAME			IGENCY TELEPHONE 9/275-1400	NO.
ADDRESS (Number, Steect. City, State, of 1061 Cudahy Pl. (92110)	ind ZIP Code) P.O. Box 80607 Sa	n Diego, Califor	nia 92138-90	21
Organic mixture		TRACE	S S	
CHEMICAL FAMILY	FO.	RMULA N/A		).

SECTION	11)	HAZAF	RDOUS INGREDIENTS		
PAINTS, PRESERVATIVES, & SOLVENTS	*	TLV (Units)	ALLOYS AND METALLIC COATINGS	×	TLV (Units)
PIGMENTS not applicable			BASE METAL not applicable		
CATALYST			ALLOYS		4
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS		ر شد			
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					TLV (Units)
Aliphatic petroleum distillate (Stoddard Solvent) CAS 8052-41-3 over					
Petroleum Base 011			CAS 8012-95-1 over	15	<u> </u>
A-70 hydrocarbon propellant (1	.iqu	Lfied p	etroleum gas) CAS 68476-85-7	25	1000ррі
Proprietary corrosion inhibito	ors a	and wet	ting agents* Balance		

ECIFIC GRAVITY (H20=1) Total mix in can .710
Total mix in can .710
RCENT, VOLATILE VOLUME (%)Total can contents 80
VAPORATION RATE
2 27 2

FLASH POINT (Method used) Not applicable to	spray	cans		propellar	LIMITS it portion	Let L. 8% Vo	Uel 1 9.5% VO
EXTINGUISHING MEDIA		*	chemical, foam		and the second s	er jego a jaka deljad	. 24) <b>.</b>
SPECIAL FIRE FIGHTING PR	OCEDUR	ES					erepido (
						ast daylor i b	1 1000
UNUSUAL FIRE AND EXPLO	SION HA	ZARD	s Considered	"extremely	flammable'	under Co	nsumer

<sup>\*</sup> These do not constitute any special toxicity or handling hazards.

		CTION	IV HEA	LTH HAZARD D	DATA
THRESHOLD LIMIT	Stoddard EXPOSURE Drving	Solve of sk	nt (lowes	st TLV of all	OSHA 500ppm components )ACGIH 100ppm halation of vapor may cause
anesthesia, he can cause irr chemical pneu	eadache, dizzi itation, nause	ness. a, vom	nausea & niting and	upper respira 1 diarrhea. A	tory irritation. Swallowing Asparation into lungs can caus
For skin cont	act, wash with	soap	and water	r, apply skin	nduce vomiting, call a physici cream. For inhalation, move it breathing is difficult,
	Carcin	ogen i	informatic	on: N/A	
		SECTIO	ON VI - R	EACTIVITY DA	TA
STABILITY	UNSTABLE		CONDITION	N/A	
INCOMPATABILITY	STABLE (Materials to avoid)	Х			
	MPOSITION PRODUC	T5	Stron N/A	ng oxidizing m	naterials
HAZARDOUS	MAY OCCUR			CONDITIONS TO	AVOID N/A
POLYMERIZATION	WILL NOT O	CCUR	х		
·					
	SECT	ION VI	I . SPH I	OR LEAK PROC	PEDLIBES
	IN IN CASE MATERIA	AL IS RE	LEASED OR	SPILLED	ced in plastic bag or open
	essure had dis			snoutu be plac	ed in plastic bag of open
WASTE DISPOSAL	Empty s	pray o	ans shou	ld not be pund	ctured or incinerated, bury
in land fill.	Liquid shoul	d be i	incinerat	ed or buried	in land fill.
<del></del>					
	SECTION	VIII -	SPECIAL F	PROTECTION IN	IFORMATION
RESPIRATORY PRO	OTECTION (Specify ty	pe)			
VENTILATION	Sufficient			t vapor less	SPECIAL None
	than TLV.				OTHER None
PROTECTIVE GLOV		red		EYE PROTECTION	N None required
OTHER PROTECTIV					
	S	ECTION	V IX SPÉ	CIAL PRECAU	TIONS
PRECAUTIONS TO	BE TAKEN IN HAND	LING OF	ID STORING		
	irces of ignit; icles. Do no				. Avoid excessive inhalation
Other Precaut	ions: Do not	incin	erate or	puncture cont	ainers
Revisi	on Date Dece	mber 1	8, 1985	Supersede	es September 1, 1984



4450 Cranwood Court

(216) 475-3600 Toll Free: 1-800-321-6188 Telex: 6873201 Loctituw

MATERIAL SAFETY DATA SHEET

DATE: 12/31/85

PAGE: 1

AUTUMOTIVE JOBBERS WHSE 621 S & UNION AVE >

PORTL AND

OR

97214

\* ATTN: SAFETY SUPERVISOR

1. PRODUCT IDENTIFICATION

GOUCT NAME: 9

RT NO .: 99MA

79340) - 80065

COUCT TYPE: AEROSOL ADHESIVE SEALANT

#### II. CUMPOSITION

INGREDIENTS 5 BY WT. HAZARD

ETUNE 30-35 TLV = 1000PPM\* y

THYLENE CHLORIDE 10-15 TLV = 100 PPM\*

PANEZISOBUTANE PROPELLENT 35-40 TLV = 1000 PPM

OROCARBON RESINS 20-25

IQUID ACETONE IS AN EYE IRRITANT. VAPOR EXPOSURE ABOVE TLV MAY CAUSE IN OR EYE IRRITATION.

METHYLENE CHLORIDE IS AN EYE IRRITANT. IT IS MODERATELY TOXIC BY GESTION AND INHALATION. IT HAS BEEN SHOWN TO CAUSE TUMORS AND REDUCTIVE EFFECTS IN EXPERIMENTAL ANIMALS ON PROLONGED INHALATIONS.

ALSO HAS BEEN SHOWN TO CAUSE MUTATION EFFECTS IN EXPERIMENTAL HALS.

IS OUR BEST TECHNICAL KNOWLEDGE THAT, WITH PROPER PRECAUTIONS, RMAL USE OF THIS PRODUCT POSES NO SUCH HAZARD.

#### III. CHEMICAL AND PHYSICAL PROPERTIES

POR PRESSURE: <130 % 140 DEG. F. POR DENSITY: HEAVIER THAN AIR LUBILITY IN WATER: LESS THAT 14 PEARANCE: RED LIQUID

SPECIFY GRAVITY: NOT APPLICABLE
BOILING POINT: NOT APPLICABLE
PH: DOES NOT APPLY
ODOR: SOLVENT

IV. TOXICITY AND HEALTH HAZARD DATA

ICITY:

IRRITANT

POR AND LIQUID HARMFUL BY INHALATION AND INGESTION

V: 785 PPM



4450 Cranwood Court Cleveland, Ohio 44128

(216) 475-3800 Toli Free: 1-800-321-9188 Telex: 6873201 Loctituw

PAGE: 2

(PTOMS OF OVEREXPOSURE: Y CAUSE DIZZINESS OR IN EXTREME CASES, ABSENCE OF OXYGEN COULD CAUSE RCOSIS.

ERGENCY TREATMENT PROCEDURES:

INGESTION:

INDUCE VUMITING. CALL A PHYSICIAN.

ENHALATION:

MEMOVE TO FRESH AIR

SKIN CONTACT:

WASH WITH SOAP AND WATER

EYE CONTACT:

TLUS WITH WATER FOR 15 MINUTES. UBIAIN MEDICAL HELP.

**SONAL PROTECTION:** 

TYES:

ROT NEEDED FOR NORMAL USE.

IXIN:

HOT NEEDED FOR NORMAL DISE.

FENTILATION:

SORMAL VENTILATION FOR NORMAL USE.

#### V. FLAMMABILITY AND EXPLOSIVE PROPERTIES

\*SH POINT: BELOW 20 DEG. F. METHOD: T.O.C.
\*LOSIVE LIMITS(% BY VOLUME IN AIR) LOWER: UNK % UPPER: UNK %
COMMENDED EXTINGUISHING AGENTS: WATER FOG. FOAM, CO2, DRY CHEMICAL
\*ARDOUS PRODUCTS FORMED BY FIRE OR THERMAL DECOMPOSITION:
\*DES OF CARBONS
\*SUAL FIRE OR EXPLOSION HAZARDS:
\*CLEVATED TEMPERATURES, CONTAINERS MAY VENT, RUPTURE OR BURST.
\*APRESSED GASES:
\*NAME: PROPAME/ISOBUTANE
\*PRESSURE AT ROOM TEMPERATURE: <130 DEG PSIG

VI. REACTIVITY DATA

BILLTY:

IXI STABLE

I I UNSTABLE

CARDOUS POLYMERIZATION:

I I MAY UCCUR

IXI MAY NOT OCCUR

4450 Cranwood Court Cleveland, Ohio 44128

(215) 475-3600 Tolf Free: 1-800-321-8188 Telex: 6873201 Loctitum

PAGE: 3

ME KNOWN

COMPATABILITY: ESSURIZED CONTAINER COULD RUPTURE ABOVE 130 DEG. F.

VII. SPILL OR LEÁK AND DISPOSAL PROCEDURES

SPS TO BE TAKEN IN CASE OF SPILL OR LEAK: TILATE AREA WELL. FLUSH WITH LARGE QUANTITIES OF WATER.

COMMENDED METHODS OF DISPOSAL:

NOT PUNCTURE OR INCINERATE CONTAINERS. GIVE TO DISPOSAL SERVICE
JIPPED TO HANDLE AND DISPUSE OF PRESSURIZED CONTAINERS.

VIII. STORAGE AND HANDLING PROCEDURES

DRAGE:
NOT STORE ABOVE 120 DEG. F. DO NOT EXPOSE TO DIRECT SUNLIGHT.

SERVE NORMAL SAFETY PRECAUTIONS.DO NOT PUNCTURE CUNTAINERS. DO NOT RAY NEAR FIRE OR OPEN FLAME. AVOID BREATHING CONCENTRATED VAPOR.

IX. SHIPPING REGULATIONS

→E OR CLASS DOT: ORM→D

TATA: CLASS 2, FLAMMABLE

OPER SHIPPING NAME

DOT: CONSUMER COMMODITY

IATA: AEROSOL, FLAMMABLE, N.O.S. UN 1950

EPARED BY: ROBERT J. CARTER

TLE: DIR., CONSUMER & TECHNICAL AFFAIRS

TE: 11/01/85

PERSEDES: NEW ISSUE

Dear Customer. This Bulletin contains important environmental, health and toxicology information for your employees who recently ordered this product. Please make sure this information is given to them. If you resell this product, this Bulletin should be given to the Buyer. This Form may be reproduced without permission

Chevron U.S.A. Inc.

APR 1 1986

# **Material Safety Data Sheet**

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910,1200). (Formerly Called MATERIAL INFORMATION BULLETIN)



CHEVRON Thinner 350B

CPS 210433

DANGER!

HARMFUL OR FATAL IF SWALLOWED

COMBUSTIBLE

KEEP OUT OF REACH OF CHILDREN

TYPICAL COMPOSITION

Light petroleum distillate (CAS 64742-47-8) containing:

Paraffins and naphthenes

98%

Aromatics:

 $C_9$ - $C_{12}$  alkylbenzenes (CAS 68515-25-3)

Benzene (CAS 71-43-2)

21 <.1%

#### EXPOSURE STANDARD

No Federal OSHA exposure standard or ACGIH TLV has been established for this material. Based on information reviewed to date, we recommend an exposure standard of 125 ppm.

#### PHYSIOLOGICAL & HEALTH EFFECTS

#### EMERGENCY & FIRST AID PROCEDURES

#### Eyes

Expected to cause no more than minor eye irritation.

Flush eyes immediately with fresh water for at least 15 minutes while holding the eyelids open. If irritation persists, see a doctor.

#### Skin

Prolonged or frequently repeated contact may cause skin irritation or may cause the skin to become cracked or dry from the defatting action of this material.

Wash skin thoroughly with soap and water. See a doctor if irritation occurs. Launder contaminated clothing.

#### Inhalation

Breathing the vapors at concentrations above the recommended exposure standard cause central nervous depression. See Additional Health Data.

If there are signs symptoms OI as described in this MSDS due to breathing this material, move the person to fresh If breathing has stopped, apply artificial respiration. Call a doctor immediately.

#### Ingestion

Not expected to have acute systemic toxicity by ingestion. Note to Physician: Ingestion of this product or subsequent vomiting can result in aspiration of light hydrocarbon liquid which can pneumonitis.

If swallowed, give water or milk to drink and telephone for medical advice. DO NOT make person vomit unless directed to do so by medical personnel. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center hospital.

Chevron Environmental Health Center, Inc., P.D. Box 4054, Richmond, CA 94804-0054

X-180021 (07-85)

No. 93

Rev. 7 01/17/86

See Page 3.

#### SPECIAL PROTECTIVE INFORMATION

Eye Protection: Do not get in eyes. Eye contact can be avoided by wearing chemical safety goggles.

Skin Protection: Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing impervious protective clothing including rubber gloves.

Respiratory Protection: Wear approved respiratory protection such as an organic vapor cartridge respirator or an airsupplying respirator unless ventilation equipment is adequate to keep airborne concentrations below the recommended exposure standard.

Ventilation: Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

#### FIRE PROTECTION

Liquid evaporates and forms vapor (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. Fire hazard is greater as liquid temperature rises above 85°F.

Flash Point: (TCC)105°F(41°C) Min. Autoignition Temp.: 490°F (254°C) Flammability Limits: 1.0-6.0%

Extinguishing Media: CO<sub>2</sub>, Dry Chemical,

Foam, Water Fog

Special Fire Fighting Procedures: For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment. This may include self-contained breathing apparatus to protect against the hazardous effects of normal products of combustion or oxygen deficiency. Read the entire MSDS.

#### SPECIAL PRECAUTIONS

See Page 3.

Environmental Impact: Certain geographical areas have air pollution restrictions concerning the use of materials in work situations which may release volatile components to the atmosphere. Air pollution regulations should be studied to determine if this material is regulated in the area where it is to be used.

Precautions if Material is Released or Spilled: Eliminate all open flame vicinity of spill or released vapor. Stop the source of the leak or release. up releases as soon as possible, observing precautions in Special Protective Information. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

Waste Disposal Methods: Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

#### REACTIVITY DATA

Stability (Thermal, Light, etc.): Stable. Incompatibility (Materials to Avoid): May react with strong oxidizing materials. Hazardous Decomposition Products: Normal combustion forms carbon dioxide and water vapor; incomplete combustion can produce carbon monoxide.

Hazardous Polymerization: Will not occur.

#### PHYSICAL PROPERTIES

See Page 3.

The above information is based on data of which we are aware and is believed to be correct as of the date hereof. Since the information contained herein may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon the condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

No. 93

CHEVRON Thinner 350B CPS 210433

#### ADDITIONAL HEALTH DATA

Signs and symptoms of central nervous system effects may include one or more of the following: headache, dizziness, loss of appetite, weakness and loss of coordination. Affected persons usually experience complete recovery when removed from the exposure area.

#### SPECIAL PRECAUTIONS

READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.

DO NOT USE OR STORE near flame, sparks or hot surfaces. USE ONLY IN WELL VENTILATED AREA. Keep container closed.

DO NOT weld, heat or drill container. Replace cap or bung. Emptied container still contains hazardous or explosive vapor or liquid.

CAUTION! Do not use pressure to empty drum or explosion may result.

Reactivity: 0, Flammability: 2, Health: 1\* (\* indicates may have chronic toxicity)

#### PHYSICAL PROPERTIES

Solubility: Miscible with hydrocarbons; insoluble in water. Appearance (Color, Odor, etc.): Colorless liquid. Boiling Point: 168°C (335°F) Max. 10% Rec. Melting Point: n/a Specific Gravity: 0.79 € 15.6/15.6°C Vapor Pressure: 5 mm Hg @ 77°F Vapor Density (Air=1): 4.9 Percent Volatile (Volume 1): 99+ Evaporation: (Bu Ac=1) 0.13 Molecular Weight: 142(Avg.) Viscosity: 1.072 cSt @ 37.8°C

n/a = Not Applicable

X-JBCD41 (07-85)

NATIONAL SANITARY SUPPLY CO. 13217 S. Figueroa Street Los Angeles, California 90061 Tel. No. 213/770-1970 Emergency Tel. No. 213/327-6795

MATERIAL SAFETY DATA SHEET

SECTION 1. IDENTIFICATION OF PRODUCT

Product Name: DEO BLOX Date Issued: 1/24/86

Chemical Name and Synonyms: PARADICHLOROBENZENE National Item#: 1806XX

Chemical Family: CHLORINATED BENZENE

Formuta: C6H4CL 2

SECTION 2. INGREDIENTS CAS NUMBER

PERCENT TLV UNITS

PARADICHLOROBENZENE FRAGRANCE EXEMPT

106-46-7

99.75% 0.25% 450 Mg per M3

SECTION 3. PHYSICAL DATA

Specific Gravity (H20=1): 1.236 a 70/15.5C Boiling Point (F): 760 mm 175C Vapor Pressure (mm Hg.): 10 mm Percent Volatile (By Volume): N.A. Vapor Density (Air=1): 5.08 Evaporation Rate (BuAc=1): < 1 Solubility in Water 20C: NEGLIGIBLE .069% Appearance and Odor: WHITE CRYSTALS, ODOR OF "MOTH BALLS"

Section 4. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method): (C.C.) 150F

Flammable Limits: NOT AVAIL.

Extinguishing Media: WATER, FOAM, CO2 OR DRY CHEMICAL

L Fire Fighting Procedures: RESPIRATORY PROTECTION WHEN FIGHTING FIRES WHERE EXPOSURE TO VAPORS OR GASES IS POSSIBLE.

Unusual Fire & Explosion Hazards: HIGHLY TOXIC GASES (CHLORIDES AND CHLORINE) CAN BE EVOLVED IN FIRES OF THIS PRODUCT.

SECTION 5. REACTIVITY DATA

Stability: STABLE

Conditions to Avoid:

Incompatibility - Materials to Avoid: STRONG OXIDIZING AGENTS.

Hazardous Polymerization: WILL NOT OCCUR

Conditions to Avoid:

Hazardous Decomposition Products: CO, CO2, SMOKE, SOOT, CHLORIDES AND CHLORINE

SECTION 6. SPILL, LEAK AND DISPOSAL PROCEDURES

Spill Response: SCRAPE UP OR ABSORB ON CLAY, SAWDUST OR OTHER ABSORBENT MATERIAL OR DRUM AND DISPOSE OF IN APPROVED CHEMICAL LANDFILL IN ACCORDANCE WITH LOCAL AND STATE REGULATIONS.

Waste Disposal: BURY IN CHEMICAL LANDFILL.

SECTION 7. HEALTH HAZARD DATA

Threshold Limit Value: 75 ppm IN AIR; 450 mg. PER CUBIC METER IN AIR.

Effects of Overexposure: LOSS OF CONCIOUSNESS, CYANDSIS AND IRREGULAR PULSE. IRRITATION TO THE SKIN AND MUCOUS MEMBRANCES.

SECTION 8. EMERGENCY AND FIRST AID PROCEDURES

REMOVE FROM EXPOSURE. REMOVE CONTAMINATED CLOTHING. WASH CONTACTED AREA WITH LARGE QUANTITIES OF WATER AND SOAP (IF AVAILABLE). REFER TO PHYSICIAN.

SECTION 9. SPECIAL PROTECTION INFORMATION

Respiratory Protection: BUREAU OF MINES APPROVED RESPIRATOR FOR ORGANIC VAPORS.

Ventilation: YES - FOR VAPORS & DUST

Protection Gloves: RUBBER

Eye Protection: CHEMICAL GOGGLES

Other Protective Clothing/Equipment:

SECTION 10. ADDITIONAL INFORMATION AND PRECAUTIONS

Handling and Storage Precautions: DO NOT STORE NEAR STRONG OXIDIZING AGENTS. AVOID SKIN AND EYE CONTACT. AVOID INHALATION OF DUSTS OR VAPORS.

THE INFORMATION ON THIS MATERIAL SAFETY DATA SHEET REPRESENTS THE LATEST DATA AND BEST OPINION AS TO THE PROPER USE AND HANDLING OF THIS PRODUCT UNDER NORMAL CONDITIONS. ANY USE OF THIS PRODUCT OR METHOD OF APPLICATION WHICH IS NOT IN CONFORMANCE WITH THIS DATA SHEET AND THE PRODUCT LABEL DIRECTIONS, IS THE RESPONSIBILITY OF THE USER. THIS MATERIAL SAFETY DATA SHEET WAS PREPARED TO COMPLY WITH THE OSHA HAZARD COMMUNICATION REGULATION.

NATIONAL SANITARY SUPPLY CO. 13217 S. Figueroa Street Los Angeles, California 90061 Tel. No. 213/770-1970 Emergency Tel. No. 213/327-6795

MATERIAL SAFETY DATA SHEET

SECTION 1. IDENTIFICATION OF PRODUCT

Product Name: BOWE BLOX

Chemical Name and Synonyms: PARADICHLOROBENZENE National Item#: 1808XX

Chemical Family: CHLORINATED BENZENE

Formula: C6H4CL<sub>2</sub>

TLV UNITS SECTION 2. INGREDIENTS CAS NUMBER PERCENT

PARADICHLOROBENZENE FRAGRANCE EXEMPT

106-46-7

Date Issued: 1/24/86

99.75% 450 Mg per M3

SECTION 3. PHYSICAL DATA

Specific Gravity (H20=1): 1.236 @ 70/15.5C Boiling Point (F): 760 mm 175C Vapor Pressure (mm Hg.): 10 mm Percent Volatile (By Volume): N.A. Vapor Density (Air=1): 5.08 Evaporation Rate (BuAc=1): < 1 Solubility in Water 20C: NEGLIGIBLE .069% Appearance and Odor: WHITE CRYSTALS, ODOR OF "MOTH BALLS"

Section 4. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method): (C.C.) 150F

Flammable Limits: NOT AVAIL.

Extinguishing Media: WATER, FOAM, COZ OR DRY CHEMICAL

Special Fire Fighting Procedures: RESPIRATORY PROTECTION WHEN FIGHTING FIRES WHERE EXPOSURE TO VAPORS OR GASES IS POSSIBLE.

Unusual Fire & Explosion Hazards: HIGHLY TOXIC GASES (CHLORIDES AND CHLORINE) CAN BE EVOLVED IN FIRES OF THIS PRODUCT.

SECTION 5. REACTIVITY DATA

Stability: STABLE

Conditions to Avoid:

Incompatibility - Materials to Avoid: STRONG OXIDIZING AGENTS.

Hazardous Polymerization: WILL NOT OCCUR

Conditions to Avoid:

Hazardous Decomposition Products: CO, CO2, SMOKE, SOOT, CHLORIDES AND CHLORINE

SECTION 6. SPILL, LEAK AND DISPOSAL PROCEDURES

Spill Response: SCRAPE UP OR ABSORB ON CLAY, SAWDUST OR OTHER ABSORBENT MATERIAL OR DRUM AND DISPOSE OF IN APPROVED CHEMICAL LANDFILL IN ACCORDANCE WITH LOCAL AND STATE REGULATIONS.

Waste Disposal: BURY IN CHEMICAL LANDFILL.

37.2

: :: :

SECTION 7. HEALTH HAZARD DATA

Threshold Limit Value: 75 ppm IN AIR: 450 mg. PER CUBIC METER IN AIR.

Effects of Overexposure: LOSS OF CONCIOUSNESS, CYANOSIS AND IRREGULAR PULSE. IRRITATION TO THE SKIN AND MUCOUS MEMBRANCES.

SECTION 8. EMERGENCY AND FIRST AID PROCEDURES

REMOVE FROM EXPOSURE. REMOVE CONTAMINATED CLOTHING. WASH CONTACTED AREA WITH LARGE QUANTITIES OF WATER AND SOAP (IF AVAILABLE). REFER TO PHYSICIAN.

SECTION 9. SPECIAL PROTECTION INFORMATION

Respiratory Protection: BUREAU OF MINES APPROVED RESPIRATOR FOR ORGANIC VAPORS.

Ventilation: YES - FOR VAPORS & DUST

Protection Gloves: RUBBER

Eye Protection: CHEMICAL GOGGLES

Other Protective Clothing/Equipment:

SECTION 10. ADDITIONAL INFORMATION AND PRECAUTIONS

Handling and Storage Precautions: DO NOT STORE NEAR STRONG OXIDIZING AGENTS. AVOID SKIN AND EYE CONTACT. AVOID INHALATION OF DUSTS OR VAPORS.

THE INFORMATION ON THIS MATERIAL SAFETY DATA SHEET REPRESENTS THE LATEST DATA AND BEST OPINION AS TO THE PROPER USE AND HANDLING OF THIS PRODUCT UNDER NORMAL CONDITIONS. ANY USE OF THIS PRODUCT OR METHOD OF APPLICATION WHICH IS NOT IN CONFORMANCE WITH THIS DATA SHEET AND THE PRODUCT LABEL DIRECTIONS, IS THE RESPONSIBILITY OF THE USER. THIS MATERIAL SAFETY DATA SHEET WAS PREPARED TO COMPLY WITH THE OSHA HAZARD COMMUNICATION REGULATION.



### North American Refractories Co.

900 Hanna Building 1422 Euclid Avenue Cleveland, Ohio 44115 216/621-5200

NORTH AMERICAN REFRACTORIES PRODUCT SAFETY DATA SHEET

MANUFACTURER

MSDS # 3042-00

NORTH AMERICAN REFRACTORIES

Vendor:

Emergency Phone Number East (814) 236-3890 West (415) 432-4741

Date Issued: 01/24/86

Date Revised: 10/19/85

Product Type: Refractory Castable / Gun Material

Trade Name: LITECRETE 90

潮腾音音中理路琴亦言语识言中音电激电

SECTION I - PRODUCT IDENTIFICATION

Chemical Name: | Insulating Castable Chemical Family: - Aleos, Side, Cao

水洗油水水冷蒸汽等医水冷水水中水椒

TSECTION IT - CHEMICAL COMPOSITION

CAS Number:

PCT:

Hazardous Ingredients: Crystalline Silica

 $N \neq 0$ 

less than

20%

Other Ingredients:

CAS Number:

PCT:

Alumina Silicate

66402-68-4

less than

60% less than 10%

Hydrous Alumina Silicate Hydraulic Setting Cement

12005-57-1 14808-66-7

1332-58-7

less than 40% less than 15%

Silica

SECTION INC - PHYSICAL DATA

\*\*\*\*\*\*\*\*\*\*\*

Appearance and Odor. Tan, granular, dry mixture, adorless.

**建筑运搬站在南京运行上股市南部独立海湾。** 

LECTION IV - FIRE AND EXPLOSION HAZARD \*\*\*\*\*\*\*\*\*\*\*

Flammability. This product is non-flammable and will not support . combustion

### North American Refractories Co.

900 Hanna Building 1422 Euclid Avenue Cleveland, Ohio 44115 216/621-5200

SECTION V - HEALTH HAZARD \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Threshold Limit Value: For respirable dust: 10 divided by (%Qtz. + 2) expressed as mg/m3. Effects of Overexposure: Cement may cause invitation to skin and eyes. Chronic exposure to dust could contribute to Emergency and First Aid Data: Skin: Wash thoroughly with soap and water. Eyes: Flush with water for 15 minutes and get medical help. SECTION VI - REACTIVITY DATA Stability and Reactivity: This product is stable and non-reactive. SECTION VII - SPILL AND LEAK PROCEDURES \*\*\*\*\* Steps to be Taken in Case of a Spill: Avoid generating dust exposure during cleanup. Waste Disposal Method: Dispose of material according to local, state or federal regulations and as final used condition of the product dictates. SECTION VIII - INDUSTRIAL HYGIENE INFORMATION \*\*\*\*\*\* Ventilation: Local exhaust recommended to maintain exposures below TLV. Respiratory Protection: Approved dust type for exposures above TLV. Protective Gloves: Impervious gloves recommended. Eye Protection: Recommended.

\*\*\*\*\*\*\*\*\*\*\* SECTION IX - SPECIAL PRECAUTIONS

Special Precautions: Avoid dust generation.

Precautionary Labeling: Product contains crystalline silica and

hydraulic setting cement.

WARNING: Prolonged inhalation of product dust may cause delayed lung injury (silicosis). Contact may cause irritation to eyes and skin.

removed by washing with soap and water. See Chevron Material Safety Data Sheet No. 1793 for additional information on used motor oil.

CHEVRON DELO 400 Motor Oil SAE 15W-40

**CPS 225006** 

#### ADDITIONAL HEALTE DATA

Signs and symptoms of respiratory tract irritation may include, but may not be limited to, one or more of the following, depending on concentration and length of exposure: nasal discharge, nosebleed, sore throat, coughing, bronchitis, pulmonary edema and difficulty in breathing.

This product contains zinc dialkyldithiophosphate (ZDDP). ZDDPs have been tested by repeated application to the skin of young rabbits for three weeks. These rabbits developed severe skin damage, weight loss, and adverse testicular effects. Follow-up studies indicated similar testicular effects can be produced by placing rabbits on a restricted diet and causing them to lose weight or by treating rabbits with simple caustic chemicals and causing them to develop both severe skin irritation and weight loss. Rats similarly treated with ZDDP did not develop testicular effects even when skin damage and weight loss occurred. These results indicate that the testicular effects seen in rabbits were not caused by the toxicity of ZDDPs but were due to the species reaction to stress from severe skin irritation and weight loss. There is no evidence that human exposure to ZDDPs in the workplace will cause testicular effects since occupational exposure does not cause stress from severe skin irritation and weight loss similar to that observed in rabbits. In summary, we now believe there is no risk of male reproductive impairment from working with DDP.

Several ZDDPs have also been found to have weak mutagenic activity in cultured mammalian cells. The low level of activity occurred only at ZDDP concentrations which were highly toxic to the test cells. Since mutagenic activity was observed with zinc chloride but not with calcium dialkyldithiophosphate, the weak mutagenic activity of ZDDP may be due to the zinc in the chemical. Zinc is abundant in the environment, is an essential element in our diets, and it is generally accepted that zinc is not a health hazard. Therefore, we do not believe the test results discussed above indicate a genetic hazard to employees working with ZDDPs. Appropriate personal hygiene procedures as outlined in the MSDS, should, of course, be followed since ZDDPs in concentrated form are irritating to the skin.

This product also contains calcium phenate. When a similar calcium phenate was applied to the skin of rabbits five days/week for four weeks, the animals developed adverse testicular effects. Studies with other chemicals have since shown that rabbits may develop similar testicular effects due to stress rather than to chemical toxicity. We further investigated the effects of calcium phenates in rats, a species now recognized as more appropriate than rabbits for investigating toxicity by repeated skin exposures. Calcium phenate applied five days/week for four weeks to the skin of rats did not produce adverse testicular effects. Based on these data, we believe that there is no risk of male reproductive impairment from exposure to calcium phenate in the workplace.

This product contains base oils which the International Agency for Research on Cancer (IARC) classifies as having no evidence of carcinogenic potential.

During use in engines, contamination of oil with low levels of cancer-causing combustion products occurs. Used motor oils have been shown to cause skin cancer in mice following repeated application and continuous exposure. Brief or intermittent skin contact with used motor oil is not expected to have serious effects in humans if the oil is thoroughly 1-18CO41 807-85

No. 1210

Rev. 5 01/27/86

Out: Customer. The Bulletin contains supertant environmental, health and toucology information for your angleyers who recently endered that profined the Bulletin should be given to the Buyon This Form topy for reproduced without permission.

Chevron U.S.A. No.

# **Material Safety Data Sheet**

Prepared According to the OSKA Nozard Communication Standard (28 CFR 1810.1200). Somethy Called MATERIAL INFORMATION BULLETIN)



CHEVRON DELO 400 Motor Dil SAE 15N-40

CPS 225006

CAUTION!

MAY CAUSE EYE IRRITATION KEEP OUT OF REACH OF CHILDREN

TYPICAL COMPOSITION

Highly refined base oils (CAS 64742-65-0 and 64742-54-7) Additives including viscosity improver, inhibitors,

>70%

dispersants, calcium phenate and zinc dialkyldithiophosphate (CAS 68649-42-3)

<301

#### EXPOSURE STANDARD

No Federal OSHA exposure standard or ACGIH TLV has been established for this material. Based on information reviewed to date, we recommend an exposure standard of 5 mg/ $m^3$ . This is the Federal OSHA exposure standard and the ACGIH (1984-85) TLV for mineral oil mists.

#### PHYSIOLOGICAL & HEALTH REFECTS

#### PARGENCY & PIRST AID PROCEDURES

#### Eyes

May cause eye irritation. Application into the eyes of rabbits produced moderate membrane irritation without corneal injury. Flush eyes immediately with fresh water for at least 15 minutes while holding the eyelids open. If irritation persists, see a doctor.

#### Skin

The skin irritation potential of this material has not been determined. However, since it contains ingredients which are irritating to the skin, it may cause skin irritation on prolonged or frequently repeated contact. See Additional Health Data.

Wash skin thoroughly with soap and water. See a doctor if irritation occurs. Launder contaminated clothing.

#### Inhalation

Not expected to be acutely toxic by inhalation. Breathing mineral oil mist at concentrations in air that exceed the recommended exposure standard can cause respiratory irritation or discomfort. See Additional Health Data.

If respiratory discomfort or irritation occur, move the person to fresh air. See a doctor if discomfort or irritation continues.

#### Ingestion

Not expected to be acutely toxic ingestion.

cic by

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

### RECEIVED

APR 8 1986

Chevron Environmental Health Center, Inc., P.D. Box 4054, Richmond, CA 94804-0054 Emergency Phone Number (415) 233-3737

H-MCD21 #7-85)

No. 1210

Rev. 5 01/27/86

See Page 3.

#### FORCIAL PROTECTIVE IMPORMATION

Bye Protection: Do not get in eyes. contact can be avoided by wearing chemical safety goggles.

Skin Protection: Avoid prolonged frequently repeated skin contact with this material. Skin contact can be minimized by wearing impervious protective clothing including gloves.

Protection: Respiratory No special respiratory protection 15 normally required. However, if operating conditions airborne concentrations exceed the recommended exposure standard, the use of an approved respirator is recommended.

Ventilation: Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

#### FIRE PROTECTION

Flash Point: (COC)410°F(210°C) Min.

Autoignition Temp.: NDA **Plannability Limits:** n/a

Extinguishing Media: CO2, Dry Chemical,

Foam, Water Fog.

Special Fire Fighting Procedures: fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment. This include self-contained breathing apparatus to protect against the hazardous effects of normal products of combustion or oxygen deficiency. Read the entire MSD5.

#### SPECIAL PRECAUTIONS

READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently.

CAUTION! Do not use pressure to empty drum or explosion may result.

#### ENVIRONMENTAL PROTECTION

Environmental Impact: This material is not expected to present any envirinmental . problems other than those associated with oil spills.

Precautions if Material is Released or Spilled: Stop the source of the leak or release. Clean up releases as soon as possible, observing precautions in Special Protective Information. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

Waste Disposal Methods: Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact environmental or health authorities for approved disposal of this material.

#### REACTIVITY DATA

Stability (Thermal, Light, etc.): Stable. Incompatibility (Materials to Avoid): May react with strong oxidizing materials . Hazardous Decomposition Products: Normal combustion forms carbon dioxide and water vapor and may produce oxides of sulfur, nitrogen and phosphorus; incomplete combustion can produce carbon monoxide. Hazardous Polymerization: Will not occur.

#### PHYSICAL PROPERTIES

Solubility: Insoluble in water. with hydrocarbon solvents.

Appearance (Color, Odor, etc.): Dark brown liquid.

Boiling Point: n/a

Melting Point: n/a

Specific Gravity: 0.88 @ 15.6/15.6°C

Vapor Pressure: n/a

Vapor Density (Air=1): n/a

Percent Volatile (Volume %): n/a

Evaporation: n/a

Viscosity: 15.4 cSt @ 100°C

n/a = Not Applicable NDA = No Data Available

The above information is based on data of which we are aware and is believed to be correct as of the date hereof. Since the information contained herein may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon the condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose. No. 1210



Division of The BOC Group, Inc.

575 Mountain Avenue Murray Hill New Jersey 07974 Telephone: 201-464-8100

## MATERIAL SAFETY **DATA SHEET**

Welding Consumables and Related Products Conforms to OSHA 1910.1200

IDENTIFICATION

PRODUCT NAME:

Olefin CHEMICAL FAMILY:

SYNONYMS: Propylene, Propene

DOT HAZARD CLASS: Flammable Gas

CAS NUMBER: 115-07-1

DOT IDENTIFICATION NUMBER: UN 1075

FORMULA: C3H6

CHEMTREC: 800-424-9300

#### HEALTH HAZARD DATA

#### TIME WEIGHTED AVERAGE EXPOSURE LIMIT:

Mappolene is defined as a simple asphyxiant. Oxygen levels should be maintained at greater than 18 molar percent at normal atmospheric pressure which is equivalent to a partial pressure of 135 mm Hg. (ACGIH, 1984-85).

HAZARDOUS	INGREDIENTS	WT %	TLV*	PEL
Propylene	(min)	96%	Simple asphyxiant	1000 PPM
Propane	(max)	4%	Simple asphyxiant	1000 PPM

#### SYMPTOMS OF EXPOSURE:

Toxic, Central Nervous System Depressant and Irritant. Contact with liquified product will cause "cold burn", frostbite or blindness. Inhalation of gas will lead to dizziness, drowziness and unconsciousness. Displaces oxygen in confined areas.

#### TOXICOLOGICAL PROPERTIES:

Breathing high concentrations causes a narcotic effect; however, the major property is the exclusion of an adequate supply of oxygen to the lungs.

Frostbite effects are a change in color of the skin to gray or white possibly followed by blistering.

#### RECOMMENDED FIRST AID TREATMENT:

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS AND BE CONGNIZANT OF EXTREME FIRE AND EXPLOSION HAZARD.

DATE OF ISSUE 3/1/86

Inhalation: Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, given mouth-to-mouth resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive.

Dermal Contact or Frostbite: Remove contaminated clothing and flush affected areas with lukewarm water. DO NOT USE HOT WATER. A physician should see the patient promptly if the cryogenic "burn" has resulted in blistering of the dermal surface or deep tissue freezing.

Hazardous Mixtures of Other Liquids, Solids, or Gases:

Mappolene is flammable over a wide range in air.

#### PHYSICAL DATA

Boiling Point: -54°F (-48°C)

Liquid Density @ Boiling Point: 4.35 @ 60°F

Vapor Pressure @ 70°F : 136 psia

Specific Gravity - Liquid 0.522 @ 60/60°F

Solubility in Water: 0.018 WT% @ 100°F

Freezing Point: N/A

Appearance and Odor: Colorless gas with Natural gas odorant.

#### FIRE/EXPLOSION HAZARDS DATA

Flash Point (Method Used): (TCC) - 162°F

Auto Ignition Temperature: N/A

LEL: 2.0 UEL: 11.1%

Extinguishing Media: Water fog, dry chemical

Electrical Classification: Class 1, Division 2

Special Fire Fighting Procedures: Stop flow of gas, If possible, and allow fire to burn out. Use water spray to cool all exposed surfaced but do not extinguish flame due to possiblity of explosive.

Unusual Fire and Explosion Hazards: Product will ignite at ambient temperatures and can be expected to form flammable mixtures upon release to the atmosphere.

#### REACTIVITY DATA

## Stability: Stable

Conditions to Avoid

Keep away from open flames, oxygen and oxidizing materials.

Incompatibility (Materials to Avoid): Oxidizing agents mineral acids, halogenated compound, nitrogen dioxide, molten sulfur.

## Hazardous Decomposition Products:

Carbon monoxide

## Hazardous Polymerization:

Will not occur

Conditions to Avoid: None

## SPILL OR LEAK PROCEDURES

## STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Vacate area. Eliminate all ignition sources. Remove cylinder to outdoors and shut off leak, if possible. Prevent escaping liquid from pooling or settling into sewers or low areas.

## Waste Disposal Method:

Cylinders should be vented to a burning flare and depressurized in open remote area. Remove valve and fuse plugs and allow cylinder to vent for 24 hours.

## SPECIAL PROTECTION INFORMATION

- 1) Eye protection with #4 or darker filter lenses when welding or cutting.
- 2) Leather gloves/aprons when cutting or welding.
- 3) Provide local exhaust as recommended by ACGIH Industrial Ventilation Manual and NIOSH Report on Engineering controls of Welding Fumes.
- 4) SCBA or air line respirator when welding or cutting in confined areas, where TLV's are exceeded, or where oxygen levels are reduced below 19%.

## SPECIAL PRECAUTIONS

## Special Labeling Information:

DOT Shipping Name: Liquified petroleum gas

DOT Shipping Label: Flammable gas DOT Hazard Class: Flammable gas

I.D. No.: UN 1075

## Special Handling Recommendations:

Use only in well-ventilated areas. Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connecting cylinder to lower pressure (<250 psig) piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.

For additional handling recommendations, consult Compressed Gas Association's Pamphlets P-1 and P-14 and Sefety Bulletin SB-2.

## Special Storage Recommendations:

Protect containers from physical damage. Store in cool, dry, well-ventilated area of non-combustible construction away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 130°F (54°C). Cylinders should be stored upright and firmly se cured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in-first out" inventory system to prevent full cylinders being stored for excessive periods of time. Post "No Smoking or Open Flames" signs in the storage or use area. There should be no sources of ignition in the storage or use area.

For additional storage recommendations, consult Compressed Gas Association's Pamphlets P-1 and P-14 and Safety Bulletin SB-2.

## Special Packaging Recommendations:

Mappolene is noncorrosive and may be used with any common structural material.

3-86



Division of The BOC Group, Inc.

575 Mountain Avenue Murray Hill New Jersey 07974 Telephone: 201-464-8100 TWX: 710-984-7970

# MATERIAL SAFETY DATA SHEET

Welding Consumables and Related Products Conforms to OSHA 1910.1200

## IDENTIFICATION

PRODUCT NAME: 1

CHEMICAL FAMILY: Rare gas

SYNONYMS: None

DOT HAZARD CLASS: Nonflammable gas

CAS NUMBER: 7440-37-1

DOT IDENTIFICATION NUMBER: UN 1006

FORMULA: Ar

CHEMTREC: 800-424-9300

## HEALTH HAZARD DATA

## TIME WEIGHTED AVERAGE EXPOSURE LIMIT:

TWA: Argon is defined as a simple asphyxiant. Oxygen levels should be maintained at greater than 18 molar percent at normal atmospheric pressure which is equivalent to a partial pressure of 135 mm Hg. (ACGIH, 1984-85)

## SYMPTOMS OF EXPOSURE:

Effects of exposure to high concentrations so as to displace the oxygen in air necessary for life may include any, all or none of the following:

- o Tingling of the tongue, fingertips or toes;
- o Weakened speech leading to the inability to utter sounds;
- o Rapid reduction in the ability to perform movements;
- o Reduced consciousness of the surroundings;
- o Loss of tactile sensations;
- o Heightened mental activity;

## TOXICOLOGICAL PROPERTIES:

Argon is nontoxic but the liberation of a large amount in a confined area could displace the amount of oxygen in air necessary to support life.

## RECOMMENDED FIRST AID TREATMENT:

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO ARGON.
RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS

Inhalation: Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, given mouth-to-mouth resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive.

\*It should be recognized that it is possible than none of the above symptoms may occur in argon asphyxia so that there are no definite warning symptoms.

Hazardous Mixtures of Other Liquids, Solids, or Gases:

None

## PHYSICAL DATA

Boiling Point: Sublimation Point = -302.6°F (-189.9°C)

Liquid Density @ Boiling Point: 87  $1b/ft^3$  (1393  $kg/m^3$ )

Vapor Pressure @ 70°F (21.1°C): Above the critical temperature of -188.1°F (-122.3°/C)

Specific Gravity @ 70°F, 1 atm (Air=1): 1.38

Solubility in Water: Very Slightly

Freezing Point: -308.9°F (-189.4°C)

Appearance and Odor: Colorless, odorless gas

## FIRE/EXPLOSION HAZARDS DATA

UEL: N/A

Flash Point (Method Used): N/A

Auto Ignition Temperature: N/A

LEL: N/A

Extinguishing Media: Nonflammable, inert gas

Electrical Classification: Nonhazardous

Special Fire Fighting Procedures: N/A.

Unusual Fire and Explosion Hazards: N/A

Appendix33-000256

Stability:

Stable

Incompatibility (Materials to Avoid):

None

Hazardous Decomposition Products:

None

Hazardous Polymerization:

Will not occur

Conditions to Avoid:

## SPILL OR LEAK PROCEDURES

## STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is in container or container valve, contact CHEMTREC for emergency assistance or your closest Airco location.

## Waste Disposal Method:

Do not attempt to dispose of residual or unused quantities. Return in the shipping container properly labeled, with any valve outlet plugs or caps secured and valve protection cap in place to Airco for proper disposal.

## SPECIAL PROTECTION INFORMATION

Respiratory Protection: Positive pressure air line with mask or self-contained breathing apparatus should be available for emergency use.

Ventilation: See local exhaust.

Local Exhaust: To prevent accumulation of high concentrations so as to reduce the oxygen level in the air to less than 18 molar percent.

Other:

Protective Gloves: Any material.

Eye Protection: Safety goggles or glasses

Other Protective Equipment: Safety shoes.

## SPECIAL PRECAUTIONS

## Special Labeling Information:

DOT Shipping Name: Argon or Argon, Compressed

DOT Hazard Class: Non Flammable Gas

DOT Shipping Label: Nonflammable gas I.D. No.: UN 1006

## Special Handling Recommendations:

Use only in well-ventilated areas. Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connecting cylinder to lower pressure (3,000 psig) piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.

For additional recommendations, consult Compressed Gas Association Pamphlets P-1, P-9, P-14, and Safety Bulletin SB-2.

## Special Storage Recommendations:

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 130F (54C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in-first out" inventory system to prevent full cylinders being stored for excessive periods of time.

For additional recommendations, consult Compressed Gas Association Pamphlets P-1, P-9, P-14, and Safety Bulletin SB-2.

## Special Packaging Recommendations:

Argon is noncorrosive and may be used with any common structural material.

## Other Recommendations or Precautions:

Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipments of a compressed gas cylinder, which has not been filled by the owner or with his (written) consent, is a violation of Federal Law (49CFR).

3-86



Division of The BOC Group, Inc.

575 Mountain Avenue Murray Hill New Jersey 07974 Telephone: 201-464-8100 TWX: 710-984-7970

# MATERIAL SAFETY DATA SHEET

Welding Consumables and Related Products Conforms to OSHA 1910.1200

## IDENTIFICATION

PRODUCT NAME:

CHEMICAL FAMILY: Oxidizer

SYNONYMS: None

DOT HAZARD CLASS: Nonflammable gas

CAS NUMBER: 7782-44-7

DOT IDENTIFICATION NUMBER: UN 1072

CHEMICAL FORMULA: 02

CHEMTREC: 800-424-9300

#### HEALTH HAZARD DATA

## TIME WEIGHTED AVERAGE EXPOSURE LIMIT:

None established. Oxygen is the "vital element" in the atmosphere in which we live and breathe (approximately 21 molar % of the atmosphere.

## SYMPTOMS OF EXPOSURE:

Breathing high concentrations greater that (75 molar percent) causes symptoms of hyperoxia which included cramps, nausea, dizziness, hypothermia, ambylopia, respiratory difficulties, bradycardia, fainting spells and convulsions capable of leading to death. For additional information on hyperoxia, see Compressed Gas Association's Pamphlet P-14.

## TOXICOLOGICAL PROPERTIES:

The property is that of hyperoxia which leads to pneumonia. Concentrations between 25 and 75 molar percent present a risk of inflammation of organic matter in the body.

DATE OF ISSUE 3/1/86

## RECOMMENDED FIRST AID TREATMENT:

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO OXYGEN. RESCUE PERSONNEL SHOULD BE COGNIZANT OF EXTREME FIRE HAZARD ASSOCIATED WITH OXYGEN RICH ATMOSPHERES

Conscious persons should be assisted to an uncontaminated area and breathe fresh air. They should be kept warm and quiet. The physician should be informed that the victim is exaperiencing (has experienced ) hyperoxia.

Unconscious persons should be moved to an uncontaminated area and given assisted respiration. When breathing has been restored, treatment should be as above. Continued treatment should be symptomatic and supportive.

## Hazardous Mixtures of Other Liquids, Solids, or Gases:

Oxygen vigorously accelerates combustion. Contact with all flammable materials should be avoided. Some materials which are not flammable in air will burn in pure oxygen or oxygen-enriched atmospheres.

## PHYSICAL DATA

Boiling Point: -297.3°F (-182.9°C)

Liquid Density @ Boiling Point: 71.23 lb/ft<sup>3</sup> (1141 kg/m<sup>3</sup>)

Vapor Pressure @ 70°F (21.1°C): Above the critical temp. of -181.1°F (-118.4°C)

Specific Gravity @ 70°F, 1 atm (Air=1): 1.11

Solubility in Water: Slightly soluble

Freezing Point: -361.8°F (-218.8°C)

Appearance and Odor: Colorless odorless gas.

## FIRE/EXPLOSION HAZARDS DATA

Flash Point (Method Used): N/A

Auto Ignition Temperature: N/A

LEL: N/A

UEL: N/A

Extinguishing Media: Copious quantities of water for fires with oxygen as the oxider.

Electrical Classification: Nonhazardous

Special Fire Fighting Procedures: If possible, stop the flow of oxygen which is supporting the fire.

Unusual Fire and Explosion Hazards: Vigorously accelerates combustion.

## REACTIVITY DATA

## Stability:

Stable

Incompatibility (Materials to Avoid): All flammable materials

## Hazardous Decomposition Products:

None

## Hazardous Polymerization:

Will not occur

## Conditions to Avoid:

## SPILL OR LEAK PROCEDURES

## STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is in container or container valve, contact CHEMTREC for emergency assistance or your closest Airco location.

## Waste Disposal Method:

Do not attempt to dispose of waste or unused quantities. Return in the shipping container properly labeled, with any valve outlet plugs or caps secured and valve protection cap in place to Airco for proper disposal.

## SPECIAL PROTECTION INFORMATION

Respiratory Protection: N/A

Ventilation: To prevent accumulation above 25 molar percent.

Local Exhaust: To prevent accumulation of high concentrations so as to reduce the oxygen level in the air to less than 18 molar percent.

Special:

Mechanical (Gen.):

Other

Protective Gloves: Any material.

Eye Protection: Safety goggles or glasses.

Other Protective Equipment: Safety shoes, safety shower.

## SPECIAL PRECAUTIONS

## Special Labeling Information:

DOT Shipping Name: Oxygen or Oxygen compressed

DOT Shipping Label: Oxidizer

DOT Hazard Class: Nonflammable Gas I.D. No.: UN 1072

## Special Handling Recommendations:

Use only in well-ventilated areas. Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connecting cylinder to lower pressure ( 3000 psig) piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.

For additional handling recommendations, consult Compressed Gas Association Pamphlets P-1, P-14, and G-4. NFPA #51-1984, OSHA 1910-Subparts H & Q

## Special Storage Recommendations:

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 130F (54C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in-first out" inventory system to prevent full cylinders being stored for excessive periods of time. Post "No Smoking or OpenFlames" signs in the storage or use area. There should be no sources of ignition in the storage or use area.

For additional recommendations, consult Compressed Gas Association Pamphlets P-1, P-14, and G-4. NFPA #51-1984, OSHA 1910 - Subparts H & Q

## Special Packaging Recommendations:

Carbon steels and low alloy steels are acceptable for use at lower pressures. For high pressure applications use stainless steels, copper and its alloys, nickel and its alloys, brass, bronze, silicon alloys, Monel R, Incone R or beryllium. Lead and silver or lead and tin alloys are good gasketing materials. Teflon R and Kel-FR are the preferred nonmetal gaskets.

Special Note: It should be recognized that the ignition temperature of metals and nonmetals in pure oxygen service decreases with increasing oxygen pressure.

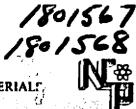
## Other Recommendations or Precautions:

Oxygen should not be used as a substitute for compressed air in pneumatic equipment since this type generally contains flammable lubricants. Equipment to contain oxygen must be "cleaned for oxygen service". See Compressed Gas Association Pamphlet G-4.1. Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipments of a compressed gas cylinder, which has not been filled by the owner or with his (written) consent, is a violation of Federal Law (49CFR).

3.86

HE.	ALTAI (	2
FL/	MMABILITY	3
REA	ACTIVITY	0
Ç,	ONAL PROTECTIVE	
15.	)UIPMENT	G

MATERIAL SAFETY DATA SHEET
FOR COATINGS, RESINS, AND RELATED MATERIALS,
REPLACES NPCA 1-82



IANUFACTURER'S NAME
NILES CHEMICAL PAINT CO.
225 Fort St.

EMERGENCY TELEPHONE NO. (616) 683-3377

P.O. Box 307 Niles, MI 49120 INFORMATION TELEPHONE NO. (616) 683-3377

ATE OF PREPARATION

March 4, 1986

	<del></del>	- PRODUCT IDENTIFI		
RODUCT NUMBER/NAM RODUCT CLASS	IE B-1857 LIGHT AIR DRY	OLIVE		
	SECTION II	- HAZARDOUS INGRI	DIENTS	
GREDIENT	CAS#	PERCENT BY WEIGHT	OCCUPATIONAL EXPOSURE LIMITS TLV (ppm)	VAPOR PRESSURE mm @ 20° C
LKYD RISIN SOLUTIO XYLENE)	N	70	100 (MFG)	NE
OW PIGMENTS		10	0.05 mg/M <sup>3</sup> as Pb 0.10 mg/m <sup>3</sup> as CrO <sub>3</sub>	NE
INERAL SPIRITS	8032-32-4	5	500 (ACGIH)	2
LAY SUSPENSION AGE MINERAL SPIRITS)	NT	<5.0	500 (MFG)	NE
100 SOLVENT	64742-95-6	<5.0	100 (ACGIH)	4.4
C ENE	1330-20-7	<5.0	100 (ACGIH)	9 @25°C
EAD COMPOUNDS		<1.0	0.05 mg/m³ as Pb	NE
ANGANESE COMPOUNDS		<1.0	5 mg/m³ as Mn	NE
BALT COMPOUNDS		<1.0	2mg/m³ as Co	NE
ROPRIETARY INGREDI	ENTS	BALANCE		
MANUFACTURER STA			NOT CONSIDERED HAZAR	DOUS UNDER
	SECTI	ON III PIIYSICAL DAT	Α	
ILING RANGE 278- APORATION RATE TR THAN ETHER	383°F	<del></del>	N HEAVIER   LIGHTER	THAN AIR

FECTS OF CVEREX	(POSURE	The second section of the second			Carlo Marchine
· · · · · · · · · · · · · · · · · · ·	<u> Зуев -</u>	con cause	severe i de s	<u> Signi Pol</u>	1 - DI.O-
onged conta	AST AID PROCEDURES				
The second second	of vapors can or in eyes was				
warrowed do	not induce v	omiting, c	err bulasicis	n Pimedia	erA.
are street	SEC	TION VI - REA	ACTIVITY DATA		
ABILITY 375-	UNSTABLE	CONDITIONS	TO AVOID	, a	
	STABLE SI				
COMPATABILITY /	Materials to avoid)	8 13	The second secon	The state of the s	Control of the Contro
ZARDOUS DECOM	POSITION PRODUCTS	trong Uxid	izing agents		ann a gaireann agus de gearra aige an taireann
e i vitare se	<del></del>		CONDITIONS TO AVO		
ZARDOUS	MAY OCCUR				
<u> </u>	WILL NOT OCCUR		N438.8134.2567度。		
1.4数数约数	e garagara katawa i	er e	S SAME STATES	<b>序界。</b>	WATOR
	2000	· · · · · · · · · · · · · · · · · · ·	DIEAK BROOF		
- the providing a last of programming the Relative of Contract	SECTION '			UNES	62.55
EPS TO BE TAKEN	IN COSE MATERIAL 13	TALESTO UN SFI	Clean ur	spills in	mediately
with absort	ent material.			<del></del>	<del></del>
		·	் சிற நடி நடிக்கு ஆண்டு கொண்டிர	t was finally	
STE DISPOSAL ME	TH <b>OO</b> Distose	of saturat	ed absorbani	in a cert	ified landfi
2.44.2	to the second of				
				114	
	SECTION VIII	· SPECIAL PR	OTECTION INFO	RMATION	
· · · · · · · · · · · · · · · · · · ·	ECTION (Specify type)		· Pyst Fireba	<u>1</u> 4%	N 변경5**©
SPIRATORY PROT				ECIAL	
SPIRATORY PROT	LOCAL EXHAUST Pro	vide suffi			aintain —
SPIRATORY PROT		*.	cient ventil	ation to m	aintain
SPIRATORY PROTE	Pro MECHANICAL (General)	expos	cient ventil ure below the EVE PROTECTION	ation to m	
SPIRATORY PROT	Pro Mechanical (General)	exnos	cient ventil ure below th	ation to memic T.L.V.	goggles.
SPIRATORY PROT	Pro Mechanical (General)	expos	cient ventil ure below the ever protection wear chemic	ation to memic T.L.V.	goggles.
NTILATION  OTECTIVE GLOVE  HER PROTECTIVE	Pro MECHANICAL (General) EQUIPMENT	expos	cient ventil ure below the ever protection wear chemic	ation to m	goggles.
SPIRATORY PROTECTION OTECTIVE GLOVES HER PROTECTIVE	Pro MECHANICAL (General) EQUIPMENT	expos	cient ventil ure below the paotection wear chemic	ation to memory and applead	goggles 34
SPIRATORY PROTECTION OTECTIVE GLOVES HER PROTECTIVE ECAUTIONS TO BE	Promethanical (General)  EQUIPMENT  SECTION	expos	cient ventil	ation to memory and applead	goggles 34
NTILATION OTECTIVE GLOVE HER PROTECTIVE ECAUTIONS TO BE	Promethanical (General)  EQUIPMENT  SECTION TAKEN IN HANDLING	ON IX - SPECI	cient ventil ure below the second wear chemic AL PRECAUTION  Avoid rough	ation to mean	nd extreme
SPIRATORY PROTESTION  INTILATION  OTECTIVE GLOVE: HER PROTECTIVE  ECAUTIONS TO BE THER PRECAUTION	Promethanical (General)  EQUIPMENT  SECTION TAKEN IN HANDLING	expos  ON IX - SPECI	cient ventil ure below the protection wear chemic AL PRECAUTION Avoid rough	ation to mee T.L.V.  1 aplach  1 splach  1 splach  2 co	nd extreme
INTILATION  OTECTIVE GLOVE: HER PROTECTIVE	Promechanical (General)  Equipment  SECTION  TAKEN IN HANDLING  Containers	expos  ON IX - SPECI	cient ventil ure below the second wear chemic AL PRECAUTION  Avoid rough	ation to mee T.L.V.  1 aplach  1 splach  1 splach  2 co	nd extreme



900 Hanna Building 1422 Eyelid Avenue Cleveland, Ohio 44115 216/621-5200

## NORTH AMERICAN REFRACTORIES PRODUCT SAFETY DATA SHEET

MANUFACTURER

MSDS # 1024-00

NORTH AMERICAN REFRACTORIES

Vendor:

Emergency Phone Number East (814) 236-3890 West (415) 432-4741

Date Issued: 03/11/86 Date Revised: 10/15/85

Product Type: Refractory Brick Shape - Alumina Silica

Trade Name: DIABLO-D

SECTION I - PRODUCT IDENTIFICATION \*\*\*\*\*\*

Chemical Name: Fireclay Brick Chemical Family: A1203, 8102

SECTION II - CHEMICAL COMPOSITION

Hazardous Ingredients: CAS Number: PET:

Crystalline Silica N/A 30 Z less than

Other Ingredients: CAS Number: PCT:

more than Alumina Silicate 66402-68-4 70%

SECTION III - PHYSICAL DATA

Appearance and Odor: Tan brick shapes, odorless

SECTION IV - FIRE AND EXPLOSION HAZARD \*\*\*\*\*\*\*

Flammability: This product is non-flammable and will not support combustion.

SECTION V - HEALTH HAZARD

Threshold Limit Value: For respirable dust: 10 divided by (XQtz. + 2)

expressed as mg/m3

Effects of Overexposure: Chronic exposure to dust could contribute to

silicosis.



900 Hanna Building 1422 Euclid Avenue Cleveland, Ohio 44115 216/621-5200

silicosis.

Sodium silicate may irritate skin and eyes.

Emergency and First Aid Data:

Skin: Wash thoroughly with soap and water

Eyes: Flush with water for 15 minutes and get

medical help.

\*\*\*\*\*\*\*\*\*

SECTION VI - REACTIVITY DATA

- 李章李章李章李章李章

Stability and Reactivity: This product is stable and non-reactive.

\*\*\*\*\*\*\* SECTION VII - SPILL AND LEAK PROCEDURES

Steps to be Taken in Case of a Spill:
Avoid generating dust exposure during cleanup.

Waste Disposal Method: Dispose of material according to local, state or

federal regulations and as final used condition of

the product dictates

\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION VIII - INDUSTRIAL HYGIENE INFORMATION \*\*\*\*\*\*

Ventilation: Local exhaust recommended to maintain exposures

below TLV.

Respiratory Protection: Approved dust type for exposures above TLV.

Protective Gloves: Impervious gloves recommended

Eye Protection: Recommended.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION IX - SPECIAL PRECAUTIONS

Special Precautions: Avoid high temperature storage, Precautionary Labeling: Product contains crystalline silica and

sodium silicate

WARNING: Prolonged inhalation of product dust may cause delayed lung injury (silicosis)

Contact may cause irritation to myes and akin.



900 Hanna Building 1422 Euclid Avenue Cleveland, Ohio 44115 216/621-5200

## NORTH AMERICAN REFRACTORIES PRODUCT SAFETY DATA SHEET

MANUFACTURER

#7

MSDS # 4026-00

NORTH AMERICAN REFRACTORIES

Vendor:

Emergency Phone Number East (814) 236-3890 West (415) 432-4747

Date: Issued: 03/11/86

Date Revised: 10/11/85

Product Type: Refractory Mortan / Coating

Trade Name: COLDSET 50

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION 1 - PRODUCT IDENTIFICATION

\*\*\*\*\*\*\*\*

Chemical Name: Fireclay Mortar, Wet, Air Setting

Chemical Family: A1203 Si02 Na20 Si02 H20

\*\*\*\*\*\*\*

Hazardous Ingredients: CAS Number:

PCT:

Crystalline Silica

N/A

less than 25%

Other Ingredients:

CAS Number:

SECTION II - CHEMICAL COMPOSITION

PCT:

Alumina Silicate Hydrous Alumina Silicate Sodium Silicate 66402-68-4 1332-58-7 1334-09-8 less than 50% less than 40%

less than

40% 25%

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

SECTION III - PHYSICAL DATA

\*\*\*\*\*\*\*\*

Appearance and Odor: Tan, fine-grained, wet mixture, odorless

\*\*\*\*\*\*\*\*\*\*

SECTION IV - FIRE AND EXPLOSION HAZARD \*\*\*\*\*\*

Flammability: This product is non-flammable and will not support combustion:

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

SECTION V - HEALTH HAZARD

\*\*\*\*\*\*

Threshold Limit Value: For respirable dust: 10 divided by (XQtz. + 2) expressed as mg/m3

Effects of Overexposure: Chronic exposure to dust could contribute to



900 Hanna Building 1422 Euclid Avenue Cleveland, Ohio 44115 216/621-5200

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION VI - REACTIVITY DATA \*\*\*\*\*\*\*

Stability and Reactivity: This product is stable and non-reactive.

\*\*\*\*\*\*\* SECTION VII - SPILL AND LEAK PROCEDURES \*\*\*\*\*\*\*\*\*

Steps to be Taken in Case of a Spill:

Avoid generating dust exposure during cleanup.

Waste Disposal Method: Dispose of material according to local, state or federal regulations and as final used condition of

the product dictates.

Ventilation: Local exhaust recommended to maintain exposures below TLV

Respiratory Protection: Approved dust type for exposures above TLV.

Eye Protection: Recommended.

\*\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION IX - SPECIAL PRECAUTIONS \*\*\*\*\*\*\*\*

Special Precautions: Avoid dust generation.

Precautionary Labeling: Product contains crystalline silica

WARNING: Prolonged/repeated inhalation of product

dust may cause delayed lung injury (silicosis)

Form Approved OMB No. 44-R1387

# U.S. DEPARTMENT OF LABOR Occupational Safety and Health Administration

# MATERIAL SAFETY DATA SHEET

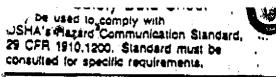
Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

	SECTION I	
MANUFACTURER'S NAME Zurn Industries, Inc., General Air Div.		EMERGENCY TELEPHONE NO. 814-453-3651
ADDRESS (Number, Street, City, State, and ZIP Code) 1335 W. 12th St., Erie, PA 16501		
CHEMICAL NAME AND SYNONYMS Pot Carb, Potash, Pearlash		TRADE NAME AND SYNON YMS Zurn Super Dry Teblets
CHEMICAL FAMILY Carbonate CAS # 584-08-7	FORMULA	Potassium Carbonate ÷ Urea
SECTION	I - HAZARDOUS INC	PENIENTS

SECTIO	II NC		RDOUS INGREDIENTS		
PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS Potassium Carbonate	80	N/A			
HAZARDOUS	MIXTU	RES OF O	THER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)
				1	

sec	TION III - I	PHYSICAL DATA	
BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H20=1)	2.2
VAPOR PRESSURE (mm Hg.)	N/A	PERCENT, VOLATILE BY VOLUME (%)	N/A
VAPOR DENSITY (AIR=1)	N/A	EVAPORATION RATE	N/A
SOLUBILITY IN WATER	Yes		
APPEARANCE AND ODOR White Solid - Tablets	<u>.                                 </u>		

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
N/A.	Non-Combustible	N/A	N/A
EXTINGUISHING MEDIA  Use water spray, dry chemical or CO <sub>2</sub>			
SPECIAL FIRE FIGHTING PROCEDURES Pressure-demand salf-contained breathing	apparatus should be provided for fire	fighters in building	gs or
		fighters in building	gs or
		fighters in building	gs or



# Occupational Salety and Health Administration (Non-Vandatory Form)

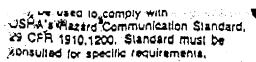


DENTITY (As used on Label and List) DATE	C-UTE	Note: Blank spaces are not permitted. Information is evaluable, the space	if any-item is not app a must be marked to	licable, or no indicate that.
( )on I				7
Manufacturer's Name VAN AIR SYSTEMS	INC	Emergency Telephone Number 814	/774-2531	4
Address (Number, Street, City, State, and ZIP C 2950 Mechanic St	(cde)	Telegnone Number for Information S	ame	•
Lake City, PA 1	6423	Oate Prepared 11 March 19	185	ingil in may not see the
		Signature of Preparer (codonal) Frederick M. Sitter		
Section II — Hazardous Ingredients	/Identity information	Product Manager		
Hazardous Components (Specific Chemical Ide	ntity: Common Name(s)\	OSHA PEL ACGIH TLY	Cther Limits Recommended	4 (opcone)
Dry-O-Lite does not have a		<u> </u>		
				•
•		<del></del>		
				·
	· · · · · · · · · · · · · · · · · · ·		·	•
/				
		•		
Section III — Physical/Chemical Cha	eracteristics		<u> </u>	· · · · · · · · · · · · · · · · · · ·
Boiling Point	> 1000°C	Specific Gravity (HgQ = 1)		1.6 gms/cc
Vapor Pressure (mm Hg.)	n/a	Melton Point Looses water of h	ydration	235° F
Vapor Denaity (AIR = 1)		Eveporation Plats (Butyl Acetate = 1)	Ť	n/a
Solubility in Water	100%			
Appearance and Odor White tablets v	with pink specs,			
Section IV Fire and Explosion Ha				,
Flash Point (Method Used)		Flammable Limits	LEL	VEL
non-flammab	le	n/a	n/a	n/a
Exinguianing Media Water, foam, C	0 <sub>2</sub> dry chemic	als		
Special Fire Fighting Procedures Standa,	rd procedures			
			r	•
	**************************************	<u> </u>		
Unusual Fire and Explosion Hazards N	one		,	

Page 1 (Continued on Reverse Side)



Spirity -	- Reactivity Da Lunarable	i ta	Conditions to Avoid				<del></del>		
# 116.4K 1	Siable		AND THE PROPERTY OF	Exposure	to atmosphe	re - table	ts will a	ttract w	ater.
		X			·				
<i>.</i>	Maranais to Avoid)		able	1				v.	
a NS Deco	mposition or Bypn	ocues.	None				•		
symerization extroous	May Coour Will Not Occur		Conditions to Avoid	N/	Α				
• • • • • • • • • • • • • • • • • • •	Trial rick Coccil	Х				•			
	- Health Hazai					× •		96,	en en en en
oute(s) of Emby	s (n	haution?	race of dust	Skin?	N/A	ing	MINON? N/A		
eanh Hazards (	(Acuse and Chronic	1	known						11 47
					•			***	
	<del>.</del>	- 2			<u> </u>				
s/cinogenicity:	NO NO	17-? NO		. WAC'N	louodusbus, MO	CS	HA Regulated?	No	
ons and Symp	Koma of Exposure	AC2 =							:
4. D and 07.14		SKIR	is dried out	t (desicca	nt action)	•	<u> </u>		
	•								
edical Condition	ns rated by Exposure	Non	e known		·	· • •			
	•								
mergency and	First Aid Procedur	Rir	se with plen	ty of room	n temperature	water; ar	d treat f	or dry	
		ski	n.				<del>V-17 has be beliefe</del> .		
esuon VII -	- Precautions	for Saf	e Handling and	Use				4	
ape to Se Tak	en in Case Historia	el la <del>Piote</del> a	sed or Spilled No	special (	recautions.	Can be cl	eaned up	with	•
		s ho	vels, brooms			*			
		0110	4		1 1				
asia Disposal	Method .	Tws	at tablets a	s ordinar	v non-combust	tible solic	waste	Solution	
<del></del>							;		
TOCUMONS to B	e Taken in Handli	10ft Skipne on	n-toxic and w	ill not su	ipport plant	or marine	ijre.		<del></del> .
			ture is non-						<del></del> .
			ep drums or tape and rep			erial is h	<u>/groscopic</u>	& delic	uesce
		. 215		<del></del>	<del> </del>	· · · · · · · · · · · · · · · · · · ·			
ection VIII	— Control Me		•	· · · · · · · · · · · · · · · · · · ·					
	ection (Specify, Typ	· · · · · · · · · · · · · · · · · · ·	id inhaling	dust. Us	e dust mask.				,
malation	Local Exhaust				Special		-		_,
	Mechanical (Gun		s adequate		Other			<del></del>	<del> </del>
deane Glove	<u> </u>			Eve	Proxection		<u> </u>		
In .case	of open cu		sensitive ski	n.	Normal prote	ction agai	nst dust a	nd dirt	
			e safety equi			<b>6</b>		•	
orivinysiana P	There	is no	need to cont		ts with bare	nands.		ived	
RE	ECEIVED FROM	503 25	15 2775	Pade, 2	8.25.1993	16:09		6 1991	<b>,</b>



# Occupational Salety and Health Administration (Non-Mandatory Form)



IDENTITY (As used on Label and Ust) DRY-0-LITE	Note: Blank spaces are not permitted. If any-item is not applicable, or no information is available, the space must be marked to indicate that.
on I	
VAN AIR SYSTEMS INC	Emerancy Telephone Number 814/774-2531
Address (Number, Street, Chy. State, and ZIP Code) 2950 Mechanic Street	Telephone Number for Information Same
Lake City, PA 16423	Date Prepared 11 March 1986
	Signature of Preparer (optional) Frederick M. Sitter
Section II — Hazardous Ingredients/Identity Inform	mailon Product Manager
Hazardous Components (Specific Chemical Identity) Common Nau	Cther Limits  whe(s)) OSHA PEL ACSIH TLY Recommended 4 (opcons)
Dry_C-Lite does not have any hazardou	
*	
Section III — Physical/Chemical Characteristics	
Boiling Point	Specific Gravity (H <sub>2</sub> O = 1)
> 1000	VC   1.6 gms/cc
Vapor Pressure (mm Hg.) n/a	Menton Point Looses water of hydration 235°F
Vapor Density (AR = 1)	Evaporation Rate (Butyl Acetate = 1)
Solublity in Weter 100%	
Appearance and Odor White tablets with pink s	pecs, odorless
Section IV - Fire and Explosion Hazard Data	
Flash Point (Method Used)	Flammable Limits n/a LEL UEL n/a n/a
non-flammable  Extinguishing Media	
Canadal Size Substice Departures	chemicals
Standa,rd procedur	( 6 )
Unusual Fire and Explosion Hazards None	
None	

Page 1 (Continued on Revorse Side)

	Reactivity Dat	A .						
mity	Unstable		Conditions to Avoid	Exposure	to atmosphere	- tablets wil	l attract	water
171 AA 44	Stable	X		т и				
npausbility (M	(DOVA CI ELENEIA	"S t	àbl€	1			(	,
Decorr	position or Byproc	luct2	None	· · · · · · · · · · · · · · · · · · ·				
noon	May Coour		Conditions to Avoid				· · · · · · · · · · · · · · · · · · ·	
merization	Will Not Occur			N/A				-
-21 21	114-11	X		···				
te(s) of Emry:	Health Hazard			SWA2		ingestion? N		
	cute and Chronic)		race of dust	SWn? N	/A	поветот И	/A	
nn mazaros (A	COR BIO CARONE)	None	known				·	
<del></del>							7.0	
	· .		•					·············
cinogeniaty:	אר - אז <u>אס</u>	ም? NO		. IARC Mor	odusbyzy NO	CSHA Regula	No No	
rus and Sympo	xure of Exposure	Skir	is dried out	t (desiccan	t action)			
	•				1			
dicat Condition		Nor	ie known			•	· .	<del></del> ·
AleniA yoʻclavi	ned by Exposure	1101	ic kilomii .				····	<u> </u>
amency and F	inst Aid Procedure	3 6:					4	
		7.11		ty of room	temperature w	ater; and trea	t for dry	
		ski						
			e Handling and	Use		· · · · · · · · · · · · · · · · · · ·		
ps to be Taxe	n in Case Materia	i is <del>Nois</del> s	used or Spilled No	special pr	ecautions. C	an be cleaned	up with	
,		s h	ovels, brooms	or water.				
			. 4			•		
se Disposal k	leunou .	Tr	eat tablets a	s ordinary	non-combustib	le solid waste	. Soluti	on is
		no:	n-toxic and w	ill not suc	port plant or	marine life.		
cavoons to Be	Teken in Hendlin	z end si	odne	tavia - res	niratory prot	ection as need	od	<del></del>
			eep grums or tape and rep			al is hygrosco	hic & gei	Iques
·	De1016 340		<del></del>			·		. ' 
		715	*14				, , , , , , , , , , , , , , , , , , ,	
	- Control Mea							· ·
	coor (20eca), i yo	", Av	oid inhaling	dust. Use		· · · · · · · · · · · · · · · · · · ·		······································
noissian			is adequate		Special	•		
	Mechanical (Gen	(Unit			Coher			
Xecure Glores	of open du	te on	sensitive ski	Eye F	Proxection ormal protect	ion against dus	st and div	rt
			e safety equi				•	. '
Kinhygiene P			need to conf			ands.		
	11101.0							<del></del>

# OSTA's Mazerd Communication Standard, 29 CFR 1910,1200. Standard must be Monsulted for specific requirements.

# Occupational Salety and Health Administration (III Mandatory Form)



≨ on I	niormation is available, the space must be marked	opicade, or no to indicate that.
VAN AIR SYSTEMS INC	Emergancy Telephone Number 814/774~2631	
Address (Number, Street, Chy. State, and ZIF Code) 2950 Mechanic Street	Telephone Number for Information Same	
Lake City, PA 16423	Date Prepared 11 March 1986	A Milliant Control
	Signature of Preparer (options) Frederick M. Sitter	
Section II — Hazardous Ingredients/Identity Information	Product Manager	
Hazardous Components (Specific Chemical Identity; Common Name(s))	Cther Limits CSHA PEL ACCIH TLY Recommended	4 (opdonia)
Ory-0-Lite does not have any hazardous o		A (CPCCALI)
The same and the s	omponence	
Section 1997		
		<del></del>
•		•
Section III — Physical/Chemical Characteristics		
Boiling Point	Specific Gravity (H <sub>2</sub> Q = 1)	
		1.6 gms/cc
Asbox buseance (unu Hdr) u/a	Memory Point Looses water of hydration	1.6 gms/cc 235°F
Vapor Pressure (mm Hg.)	Looses water of hydration  Evaporation Para	
Vapor Pressure (mm Hg.) n/a	Looses water of hydration	235°F,-
Vapor Pressure (mm Hg.)  Vapor Density (AIR = 1)  Solublity in Wister 100%  Appearance and Odor	Looses water of hydration  Evaporation Rate (Dutyl Acadas - 1)	235°F,-
Vapor Pressure (mm Hg.)  Vapor Density (AR = 1)  Solubility in Water 100%  Appearance and Coor White tablets with pink specs	Looses water of hydration  Evaporation Rate (Dutyl Acadas - 1)	235°F,-
Vapor Pressure (mm Hg.)  Vapor Density (AR = 1)  Solubility in Water  100%  Appearance and Odor  White tablets with pink specs  Section IV — Fire and Explosion Hazard Data	Looses water of hydration  Evaporation Rana (Dutyl Acadas 1)  s, odorless	235°F
Vapor Pressure (mm Hg.)  Vapor Density (NR = 1)  Solublity in Water  100%  Appearance and Odor White tablets with pink specs  Section IV — Fire and Explosion Hazard Data  Flash Point (Method Used)  non-flammable	Looses water of hydration  Evaporation Rate (Butyl Acatals - 1)  s, odorless	235°F
Vapor Pressure (mm Hg.)  Vapor Density (MR = 1)  Solubility in Water 100%  Appearance and Coor  White tablets with pink specs  Section IV — Fire and Explosion Hazard Data  Flash Point (Method Used)  non-flammable  Examplishing Media  Water, foam, CO <sub>2</sub> dry chem	Looses water of hydration  Evaporation Rata (Dutyl Acatals = 1)  s, odorless  Planumable Limits n/a  n/a	235°F
Vapor Pressure (mm Hg.)  Vapor Density (NR = 1)  Solublity in Water  100%  Appearance and Odor White tablets with pink specs  Section IV — Fire and Explosion Hazard Data  Flash Point (Method Used)  non-flammable  Exchaptishing Media	Looses water of hydration  Evaporation Rata (Dutyl Acatals = 1)  s, odorless  Planumable Limits n/a  n/a	235°F
Vapor Pressure (mm Hg.)  Vapor Density (MR = 1)  Solubility in Water 100%  Appearance and Coor White tablets with pink specs  Section IV — Fire and Explosion Hazard Data  Flash Point (Method Used)  non-flammable  Exchaptishing Media  Water, foam, CO <sub>2</sub> dry chem	Looses water of hydration  Evaporation Rata (Dutyl Acatals = 1)  s, odorless  Planumable Limits n/a  n/a	n/a
Vapor Pressure (mm Hg.)  Vapor Censity (MR = 1)  Solublity in Water 100%  Appearance and Odor  White tablets with pink specs  Section IV — Fire and Explosion Hazard Data  Flash Point (Method Used)  non-flammable  Exchaptishing Media  Water, foam, CO2 dry chem	Looses water of hydration  Evaporation Rata (Dutyl Acatals = 1)  s, odorless  Planumable Limits n/a  n/a	235°F

Page 1 (Continued on Revorse Side)

Exposure to atmosphere - tablets will attract water  Avoid N/A  dust SWn? N/A ingestion? N/A  . WRC Mccographs? NO CSHA Regulated? No
dust SWn? N/A ingestion? N/A  . WRC Monographs? NO CSYM Regulated? No
dust SWn? N/A ingestion? N/A  . WRC Monographs? NO CSYM Regulated? No
dust SWn? N/A ingestion? N/A  . WRC Monographs? NO CSYM Regulated? No
dust Skin? N/A ingestion? N/A  . WRC Monographs? NO CSYM Regulated? No
. WRC Monographs? NO CSPM Regulated? No
. WRC Monographs? NO CSPM Regulated? No
. WRC Monographs? NO CSPM Regulated? No
ed out (desireant action)
ed out (desireant action)
-u out (desired) detion)
plenty of room temperature water; and treat for dry
g and Use
No special precautions. Can be cleaned up with
rooms or water.
at a state of the
ets as ordinary non-combustible solid waste. Solution is
and will not support plant or marine life.
non-toxic - respiratory protection as needed.
s or bags closed since material is hygroscopic & deliques
d repair torn bags.
ling dust. Use dust mask.
rate Special
Cyber
re skin.   Eye Proxocan   Normal protection against dust and dirt.
ve skin.   Normal protection against dust and dirt: y equipment when required.
o contact tablets with bare hands.

13939 N. Rivergate Blvd. • Portland, Oregon 97203 503-286-1677 • FAX: 289-2272

VENDOR: 00754750

ATTN BOB

ROGERS MACHINERY CO., INC.

P. O. BOX 23279

PORTLAND, OR 97281-3279

## **INSTRUCTIONS**

- Render all invoices in duplicate to plant address.
- Show purchase order number on invoice, shipping notice and container label.
- Do not make substitutions without consulting us.
- The right is reserved to cancel this order if delivery is not made as promised.

	0302020
Date Issued	8/16/95
Date Required	8/30/95
Terms	NET 10TH PROX.
Via	U.P.S.
Freight Terms	PRE-PAY & ADD

This order is a confirmation in a confirmation

Item No.	Quantity	Unit of Meas,	Description	Store No.	Machine No.	Account No.	Price
01	1	EACH	ROTOR & SHAFT, (11-1/2") (HL-124) VIKING Supplier #: 3-566-556-012-24	36-04-113		00-00-0420-0008	138.18
			(PER ORD# 1167555, P/L# 29215 8/22/95	)			
0,2	1		IDLER & BUSHING, (HL-124) VIKING Supplier #: 3-418-400-099-42	36-04-114		00-00-0420-0008	54.52
			(PER ORD# 1167555, P/L# / /95	)			
03	1		HEAD & IDLER PIN, (HL-124) VIKING RELIEF VALVE Supplier #: 3-371-400-088	36-04-115		00-00-0420-0008	72.38
			(PER ORD# 1167555, P/L# 16561 8/22/95	)			
04	55	LBS	DESICCANT 1/2" X 1" TABLET, SUPER DRY (BAG=55 LBS) Supplier #: 71001-8-55	44-08-100		00-00-0420-0008	1.1038
			(PER ORD# 1167555, P/L# 145383 8/22/95	)			
			** ORIGINAL ORDER **				
					(		
<u></u>		1	<u> </u>	APPROVAL	ORDER MUST	BE SIGNED TO BE VALID	

Dear Customer. This Bulletin contains important environmental, health and toxicology information for your employees who recently ordered this product. Please make sure this information is given to them. If you resell this product, this Bulletin should be given to the Buyer. This Form may be reproduced without permission.

**RECE! VED**APR 1, 1986

Chevron U.S.A. In

# **Material Safety Data Sheet**

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200). (Formerly Called MATERIAL INFORMATION BULLETIN)



CHEVRON Pinion Grease MS

CPS 253806

#### TYPICAL COMPOSITION

Highly refined base oil (CAS 64742-65-0, 64741-96-4, 64742-	
52-5)	<70%
Calcium complex thickener EP agent	<10%
Molybdenum disulfide (CAS 1317-33-5) and graphite (CAS 7782-	
42-5)	<5%
Additives including inhibitors, dispersant and carbon black	
(CAS 1333-86-4)	<20%

## EXPOSURE STANDARD

No Federal OSHA exposure standard or ACGIH TLV has been established for this material.

## PHYSIOLOGICAL & HEALTH EFFECTS

#### EMERGENCY & FIRST AID PROCEDURES

## Eyes

Expected to cause no more than minor eye irritation.

Flush eyes immediately with fresh water for at least 15 minutes while holding the eyelids open. If irritation persists, see a doctor.

## Skin

Expected to cause no more than minor skin irritation following prolonged or frequently repeated contact.

Wash skin thoroughly with soap and water. Launder contaminated clothing.

#### Inhalation

Not expected to be acutely toxic by inhalation.

Since this material is not expected to be an acute inhalation problem, no first aid procedures are required.

#### Ingestion

Not expected to have acute systemic toxicity by ingestion.

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

## ADDITIONAL HEALTH DATA

This product contains base oils which the International Agency for Research on Cancer (IARC) classifies as having no evidence of carcinogenic potential.

#### SPECIAL PROT TIVE INFORMATION

Eye Protection: No special eye protection is necessary.

Skin Protection: No special skin protection is necessary.

Respiratory Protection: No special respiratory protection is normally required.

**Ventilation:** No special ventilation is necessary.

#### FIRE PROTECTION

Flash Point: (COC)475°F(Oil)
Autoignition Temp.: NDA
Flammability Limits: n/a

Extinguishing Media: CO2, Dry Chemical,

Foam, Water Fog.

Special Fire Fighting Procedures: For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus. See Hazardous Decomposition Products. Read the entire bulletin.

#### SPECIAL PRECAUTIONS

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently.

CAUTION! Do not use pressure to empty drum or explosion may result.

#### ENVIRONMENTAL PROTECTION

Environmental Impact: This material is not expected to present any environmental problems.

Precautions if Material is Released or Spilled: Clean up spills immediately, observing precautions in Special Protective Information.

Waste Disposal Methods: Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

#### REACTIVITY DATA

Stability (Thermal, Light, etc.): Stable. Incompatibility (Materials to Avoid): May react with strong oxidizing materials. Hazardous Decomposition Products: Normal combustion forms carbon dioxide and water vapor and may produce oxides of sulfur and nitrogen; incomplete combustion can produce carbon monoxide. Hazardous Polymerization: Will not occur.

## PHYSICAL PROPERTIES

**Solubility:** Soluble in hydrocarbon solvents; insoluble in water.

Appearance (Color, Odor, etc.): Black

grease.

Boiling Point: n/a
Melting Point: n/a
Specific Gravity: NDA
Vapor Pressure: n/a
Vapor Ponsity (Airel):

Vapor Density (Air=1): n/a

Percent Volatile (Volume %): n/a

Evaporation: n/a

Dropping Point: 315°C (Min.)

n/a = Not Applicable
NDA = No Data Available



## MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION

05/02/90 PAGE 1 OF 3

ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS ISSUE DATE: 04/23/86

SUPERSEDES: 03/28/86 90/00/86

ZEPSTORI

EFFECTS

SECTION I - E M E R G E N C Y C O N T A C T S

P.O. BOX 2015

TEF MANUFACTURING COMPANY NON-OFFICE HOURS, WEEKENDS, AND HOLIDAYS:AREA CODE 404 435-2973, 996-0899, 351-2952, 971-3367, 432-2873

ATLANTA, GEORGIA 30301 TELEPHONE (404)352-1680

LOCAL POISON CONTROL CENTER ............

TRANSPORTATION EMERGENCY

(EASTERN TIME ZONE)

BETWEEN 8:00A.M.-5:00P.M. CHEMTREC: TOLL FREE 1-800-424-9300 ALL CALLS RECORDED

DISTRICT OF COLUMBIA (202)483-7616 ALL CALLS RECORDED

SECTION II - HAZARDOUS INGREDIENTS

DESIGNATIONS HEPTANE CAS# 142-82-5

500

TLV

(PPM) (SEE REVERSE) PROD.

400

60-70 30-40

ETHYL ETHER CAS# 60-29-7

SPECIAL NOTE: ADVERSE HEALTH EFFECTS WOULD NOT BE EXPECTED UNDER RECOMMENDED CONDITIONS OF USE SO LONG AS PRESCRIBED SAFETY PRECAUTIONS ARE PRACTICED.

SECTION III - HEALTH HAZARD DATA

ACUTE EFFECTS OF OVEREXPOSURE:

INHALATION OF VAPOR CAN PRODUCE CENTRAL NERVOUS SYSTEM DEPRESSION CHARACTERIZED BY DIZZINESS, HEADACHE, MAUSEA, CARDIAC AND/OR RESPIRATORY DEPRESSION, STUPOR, 1"MOONSCIOUSNESS AND DEATH, IN EXTREME CASES. EXPOSURE TO HIGH CONCENTRATIONS OF JOR BY DIRECT CONTACT OR INHALATION CAN BE IRRITATING TO MUCOUS MEMBRANES, SUCH AS EYES AND UPPER RESPIRATORY TRACT. SEVERE EYE EXPOSURE TO LIQUID CAN CAUSE REVERSIBLE EYE DAMAGE. SKIN CONTACT MAY CAUSE A BURNING SENSATION AND REDDENING OF THE SKIN. INTRODUCTION OF SOLVENT TO THE LUNGS, AS IN ASPIRATION OF VOMITUS FLUIDS, MAY CAUSE CHEMICAL PNEUMONIA. EXPOSURE TO THIS PRODUCT MAY AG-GRAVATE EXISTING RESPIRATORY AND CARDIAC CONDITIONS. INHALATION OF AEROSOL MIST MAY PRODUCE CHEMICAL PNEUMONIA.

## NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in-complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date



By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFH 1910.1200) and may be interpreted as follows:

## ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hydienists.

CAR: Carcinogen---Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NEP) the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F, chemical gives off enough vapor to Ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

:: COR: Corrosive Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eve Irritant Only--Causes reversible reddening and/or inflammation of eye tissues.

FBL: Flammable—At temperatures under 100°F, chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic -- The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion -- A primary route of exposure through swallowing a liquid or solid (see below).

INH: Inhalation—A primary route of exposure through breathing of vapors (see below).

IRR: Irritant-Gauses reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable—Category is not appropriate for this product.

N/D; Not Determined—Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit -- The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer—Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value --- A time-weighted-average exposure value established by the ACGIH for the work period described

TOX: Toxic—The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the ESTD PELITLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time-weighted-average is arrived at by using a formula developed by the ACGHT for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Raints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated viting more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous in gradients may enter the body and cause a generalizedsystemic or specific-organ toxic effect.

systemic or specific-organ toxic effect.

As a further word of caution. Zep wishes to advise that serious accidents have sellted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. O NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat. flame, sparks, or other sources of ignitionalities may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be disposed on environmentally safe manner and in the accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, If you have any questions.

## DISCLAIMER

And the section

ALL COMPLEX COST MADE ON ALL COMPLEX COMPLEX CONTRACTORS

ានស្រាស់ ប្រជាពី ប្រជាពី សំណាស់ ស្រាស់ សម្រាស់ សម្រាស់ សម្រាស់ ក្រុមប្រជាពី ស្រាស់ សំខ្លួន ប្រជាពី មានសម្រាស់ ស្រាស់ ស្រាស់ អ្នកសម្រាស់ សមានសម្រាស់ សំខាន់ សំខាន់ សំពេញ 
All statements, technical information and recommendations contained herein are based on available scientific tests or data which is a statement of the statements are based on available scientific tests or data which is a statement of the statem we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all accuracy conditions under which this information and our products, or the products of other manufacturers in combination with our products. may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the fallure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.



# MATERIAL SAFETY DATA SHEET

## AND SAFE HANDLING AND DISPOSAL INFORMATION

ZEP MANUFACTURING COMPANY
ST IN MAINTENANCE PRODUCTS

ISSUE DATE: 04/23/86 ZERSTART

SUPERSEDES: 03/23/86 PROPER NO. 1000

SECTION III - HEALTH HAZARD DATA (CONTINUED)

CHRONIC EFFECTS OF OVEREXPOSURE:

REPEATED OR PROLONGED CONTACT BY INHALATION OR SKIN ABSORPTION MAY PRODUCE LIVER OR KIDNEY CAMAGE OR DAMAGE TO THE CENTRAL NERVOUS SYSTEM (CHARACTERIZED BY TING-LING OR NUMBNESS IN THE EXTREMITIES, BLURRED VISION OR CONFUSION). SKIN WHICH IS DEFATTED BY REPEATED EXPOSURE TO SOLVENTS, IS MORE SUSEPTIBLE TO IRRITATION, INFECTION, AND DERMATITIS.

MONE OF THE HAZARDOUS INGREDIENTS ARE LISTED AS CARCINOGENS BY IARC, NTP, & OSHA

EST'D PEL/TLY: 400 FPM FRIMARY ROUTES OF ENTRY: INH. SKIN.

HMIS CODES: HEALTH 1; FLAM. 4; REACT. 1; PERS. PROTECT. A ; CHRONIC HAZ. NO

FIRST AID PROCEDURES:

SKIN : IMMEDIATELY FLUSH CONTAMINATED SKIN WITH PLENTY OF WATER FOR AT LEAST 15

MINUTES. GET MEDICAL ATTENTION IF IRRITATION DEVELOPS.

EYES : IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, OC-

CASIONALLY LIFTING UPPER AND LOWER LIDS, GET MEDICAL ATTENTION AT ONCE.

INHALE: MOVE EXPOSED PERSON TO FRESH AIR AT ONCE. IF BREATHING HAS STOPPED, PER-

FORM ARTIFICIAL RESPIRATION. GET MEDICAL ATTENTION IMMEDIATELY.

IMGEST: IF SWALLOWED, DO NOT INDUCE VOMITING. IF VOMITING OCCURS, KEEP HEAD

BELOW HIP LEVEL. GET EMERGENCY MEDICAL ATTENTION IMMEDIATELY.

SECTION IV - S P E C I A L P R O T E C T I O N I N F O R M A T I O N

PROTECTIVE CLOTHING : 'NO SPECIAL MEASURES ARE REQUIRED.

: USE OF TIGHT-FITTING SAFETY GLASSES OR GOGGLES IS STRON-EYE PROTECTION

GLY RECOMMENDED, ESPECIALLY WHEN WEARING CONTACT LENSES.

RESPIRATORY PROTECTION: IF VENTILATION IS INADEQUATE, WEAR A PROPERLY FITTING

MSHA OR OSHA-APPROVED RESPIRATOR.

VENTILATION : VENTILATION SHOULD BE EQUIVALENT TO OUTDOORS. USE EX-

HAUST FANS AND OPEN WINDOWS IN ENCLOSED SPACES.

SECTION V - P H Y S I C A L D A T A (FOR FILL MATERIAL ONLY)

BOILING POINT (F) : 74F SPECIFIC GRAVITY : 0.71

GOILING POINT (F) : 74F VAPOR PRESSURE(MMHG): 442 @20C PERCENT VOLATILE BY VOLUME (%)

VAPOR DENSITY(AIR=1): 2.56 EVAPORATION RATE(BUTYL ACETATE =1): 6.9

SOLUBILITY IN WATER : SLIGHT PH(CONCENTRATE) : N/A PHIUSE DILUTION OF

1: N/A

APPEARANCE AND ODOR :A CLEAR, COLORLESS LIQUID WITH A PIERCING AROMATIC ODOR.

SECTION VI - FIRE AND EXPLOSION DATA

ASH POINT(F) (METHOD USED): EXTREMELY FLAMMABLE (CSMA)

FLAMMABLE LIMITS LEL 2% UEL 48%

EXTINGUISHING MEDIA : CO2, FOAM, DRY CHEMICAL

SPECIAL FIRE FIGHTING: DIRECT STREAM OF WATER ONTO INTACT CONTAINERS

UNUSUAL FIRE HAZARDS : CONTAINERS MAY BURST IF EXPOSED TO HEAT ABOVE 120F.

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up to state

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

## ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen—Considered a potential or confirmed cancer causing agent by either the National Toxicology: Program (NTP):

the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F, chemical gives of shough vapor to ignite if a source of lanition is present. MAY 25 SOO

CNS: Central Nervous System Depressant.

COR: Corrosive Causes irreversible alterations in living tissue (e.g. burns).

COR: Corrosive Causes irreversible alterations in living tissue (e.g. purns).

EIR: Eye trritant Only—Causes reversible reddening and/or inflammation of eye traces.

Est'd: Estimated.

FBL: Fiarnmable—At temperatures under 100°F., chemical gives off enough vapor to guillet a source of ignition is present.

HTX: Highly Toxic—The probable lethal dose for a 70 kg (150 lb.) man is one teaspooning.

ING: Ingestion—A primary route of exposure through swallowing a liquid or solid (see below).

INH: Inhalation—A primary route of exposure through breathing of vapors (see below).

IRR: Irritant—Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable—Category is not appropriate for this product.

N/D; Not Determined—Insufficient information for a determination for this item. N/D; Not Determined—Insurance in Michael Safety and Health.
NIOSH: National Institute for Occupational Safety and Health.

PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during i i servici de la compania de la co La compania de la co any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer—Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value.—A time-weighted average exposure value established by the ACGIH for the work period described TOX: Toxic—The probable lethal dose for a 70 kg man is one ounce or more. under PEL, above.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PELITLY shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This timeweighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace; conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard-coding system; since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry-this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalizedsystemic or specific organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned: ഇതുകളെ എട്ടുകൾ

Thank you for your interest in, and use of, Zep products. Zep Mahufacturing Company is concerned for your health and safety. All the safety is a second of the safety of the safety in the safety is a second of the safety. Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent to the with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

## DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which? [3,3] we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products. may be used. Zeo assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our a products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet · Note See · House · Authorities · Moral · Company in the Land · House · Authorities 


## MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION

ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS ISSUE DATE: 04/23/86 ZEPSTART

SUPERSEDES: 03/28/86 PRODUCT NINES 0300

SECTION VII - R E A C T I V I T Y DATA

STABILITY

: STABLE

INCOMPATIBILITY(AVOID) : HEAT, OPEN FLAME, SPARK, AND OXIDIZING AGENTS

FOLYMERIZATION

: WILL NOT OCCUR

HAZARDOUS DECOMPOSITION: MAY DECOMPOSE TO FORM TOXIC/CORROSIVE GASES

IF EXPOSED TO HIGH HEAT.

SECTION VIII - S P I L L AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: OBSERVE SAFETY PRECAUTIONS IN SECTIONS 4 & 9 DURING SPILL CLEAN-UP. LARGE SPILLS ARE UNLIKELY DUE TO PACKAGING. SPILL MAY BE ABSORBED ON AN INERT ABSORBE ENT (EG ZEP-0-ZOR2), PLACED IN A SUITABLE CONTAINER FOR DISPOSAL. WASH AREA THOROUGHLY WITH A DETERGENT SOLUTION AND RINSE WELL WITH WATER.

#### WASTE DISPOSAL METHOD:

PRODUCT IS CONSUMED IN USE. DO NOT CRUSH, PUNCTURE OR INCINERATE SPENT CONTAIN-ERS. LARGE NUMBERS OF AEROSOL CONTAINERS MAY REQUIRE HANDLING AS A HAZARDOUS WASTE, BUT IN MOST STATES TOTAL HAZARDOUS WASTE QUANTITIES LESS THAN 220 LBS PER MONTH MAY ALLOW DISPOSAL IN A CHEMICAL OR INDUSTRIAL WASTE LANDFILL. CONSULT LOCAL, STATE AND FEDERAL AGENCIES FOR THE PROPER DISPOSAL METHOD IN YOUR AREA.

RCRA HAZ. WASTE NOS.: DO01

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN WHEN HANDLING AND STORING: DO NOT STORE AT TEMPERATURES ABOVE 120F. OR IN DIRECT SUNLIGHT. DO NOT PUNCTURE OR INCINERATE CONTAINER. DO NOT BREATHE SPRAY MISTS OR VAPORS. KEEP PRODUCT OUT OF EYES. KEEP OUT OF THE REACH OF CHILDREN.

SECTION X - TRANSPORTATION DATA

DOT PROPER SHIPPING NAME ENGINE STARTING FLUID

DOT HAZARD CLASS: FLAMMABLE GAS

POT I.D. NUMBER : UN1960 DOT LABEL/PLACARD: FLAMMABLE A TSCA CHEMICAL INVENTORY - ALL INGREDIENTS ARE LISTED

EPA CWA 40CFR PART 117 SUBSTANCE(R@ IN A SINGLE CONTAINER): NONE

Appendix33-000283

## NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up to date.

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product: The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

## ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen—Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA). CBL: Combustible—At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of

ignition is present.

CNS: Central Nervous System Depressant. 1991 188

CNS: Central Nervous System Depressant.

COR: Corrosive Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only--Causes reversible reddening and/or inflammation of eye tissues. Est'd: Estimated.

FBL: Flammable—At temperatures under 100°F., chemical gives off enough vapor to Ignite If a source of ignition is present.

HTX: Highly Toxic -- The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion—A primary route of exposure through swallowing a liquid or solid (see below).

INH: Inhalation---A primary route of exposure through breathing of vapors (see below).

IRR: Irritant—Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable—Category is not appropriate for this product.

N/D: Not Determined—insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit--The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer—Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value—A fire-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic—The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the ESTD PELITLY shown in Section III pertains to airborne concentrations of vapors from the product as a whele. This timeweighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous Ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant: anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided strictly for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalizedsystemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptled" containers. "Empty" containers retain residue (liquid and/or vapor) and can be tangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other solves of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drain, should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should have be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and a cording to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

## DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anxicipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the fallure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.

Control of the second of the control 
# © FEDERAL MOGUL METAL REMOVAL TOOLING DIVISION



5740 N. Tripp Ave., Chicago, IL 60646

(312) 583-8200 (800) 621-1906

## MATERIAL SAFETY DATA SHEET

## **SECTION 1: PRODUCT INFORMATION**

PRODUCT DESCRIPTION: CEMENTED TUNGSTEN CARBIDE CUTTING TOOLS PRODUCT NAME(S) OR NUMBER(S):

## SECTION 2: COMPOSITION PER 29 CFR 1910.1200 (G) (4)

en la companya de la

Carbide tooling may contain any of the following ingredients in varying quantities:

HAZARDOUS COMPONENTS	OSHA PELMG/M3	ACGIH TLV MG/M3	CAS#
TUNGSTEN CARBIDE (20-97%)	N.A.	5.0	12070-12-1
COBALT (,1-30%)	.1/13/43/4 <b>13</b> /45/5	STATE OF THE STATE	7440-48-5
TANTALUM CARBIDE (0-60%)	5.03	5.0	12070-06-03
CHROMIUM CARBIDE (0-5.1%)	1.0		12012-25-0
CHROMIUM (0-4.5%)	1.0	.5	7440-47-3
MOLYBDENUM CARBIDE (0-5.0%)	15	10	12011-97-1
MOLYBDENUM (0-5.0%)	15	- 10	7439-98-7

## **SECTION 3: PHYSICAL AND CHEMICAL INFORMATION**

BOILING POINT: °F	2870 VAPOR PRESSURE (mm HG):	N/A	PH:	N/A
% VOLATILE:	N/A VAPOR DENSITY (AIR = 1):	N/A	EVAP. RATE	
WATER COLUBINED	NUA ODEOUCIO ODANIETA (UIOO ANI. 1	10 E 4E E	(DUDO) ACETATE 4	-A1/A

WATER SOLUBILITY: N/A SPECIFIC GRAVITY (H20=1): 13.5-15.5 (BUTYL ACETATE=1); N/A

APPEARANCE AND ODOR: CARBIDE TOOLING

## SECTION 4: FIRE AND EXPLOSION HAZARD INFORMATION

FLASH POINT (METHOD): N/A	FLAMMABLE LIMITS UFL: N/A LFL: N/A
EXTINGUISHING MEDIA:	For localized carbide fires smother with dry sand, dry dolomite, sodium chloride or soda ash.
SPECIAL FIRE FIGHTING PROCEDURES:	Avoid breathing fumes from burning metal. Cool containers exposed to flame with water from side until well after fire is out.
EXPLOSION HAZARDS:	Finely divided tungsten carbide powder or dust from grinding are expected to be a fire and explosion hazard when exposed to high temperature or ignition sources. Particle size and dispersion in air determine reactivity. Tungsten carbide cutting tools except as powder or dust, are not fire hazards.

## **SECTION 5: REACTIVITY INFORMATION**

STABILITY:	Stable
INCOMPATABILITY (MATERIALS TO AVOID):	Contact of dust with strong oxidizers may cause fire or explosions.
	During heating toxic metal fumes may be formed.

## SECTION 6: SAFE HANDLING INFORMATION

	Collect carbide by method which generates the teast amount of dust.
WASTE DISPOSAL METHODS:	Scrap tungsten carbide is valuable and should be reclaimed.  If material cannot be reclaimed, disposal should be made in compliance with federal, state and local environmental regulations.

## **SECTION 7: HEALTH HAZARD INFORMATION**

ROUTES OF ENTRY: CUTANEOUS: Possible INGESTION: Possible INHALATION: Primary

## **HEALTH HAZARDS-SIGNS AND SYMPTOMS OF EXPOSURE:**

Primary exposure hazard to employees will be from the material that is machined. Particular attention should be given to health hazards of those materials. During normal use, small quantities of carbide dust may be generated, resulting in possible employee exposure to any of the following materials.

and the state of the control of the

TUNGSTEN:	Exposure to skin and eye may result in Irritation. Possibly some lung and respiratory tract irritation however, tungsten metal generally considered to have low order of chronic toxicity.
COBALT:	Acute exposures may result in irritation of eyes; skin and respiratory tract. Skin contact with cobalt may result in contact and sensitization dermatitis with possible cross sensitization to nickel and chrome. Chronic inhalation of cobalt dust may result in pulmonary sensitization and interstitial fibrosis. Symptoms of overexposure include coughing, dyspnea, soreness of chest and and weight loss.
TANTALUM:	Tantalum is generally considered to have a low order of toxicity.  Possible lung and eye irritation could occur at high exposure levels.
CHROMIUM +3	Chromium in the +3 valence has a low order of toxicity. In some workers chrome compounds may act as allergens. High concentrations of particulate may initiate the respiratory tract.
MOLYBDENUM:	May produce irritation of eyes and mucus membranes of the nose and throat. Insoluble molybdenum compounds are considered to have a low order of toxicity.

## **CARCINOGENICITY (IARC, NTP AND OSHA)**

None of the components of this material have been identified as known or suspected carcinogens by NTP, IARC or OSHA.

## FIRST AID PROCEDURES:

INHALATION:	If symptoms of pulmonary involvement develop (coughing, wheezing, etc.) remove from exposure and seek medical attention.
EYE CONTACT:	If irritation occurs, flush with large amounts of water, occasionally lifting upper and lower lids, until no evidence of material remains (approximately 15-30 minutes). Get medical attention.
SKIN CONTACT:	if irritation or rash occurs, thoroughly wash affected area with a mild soap and large amounts of water until material is removed. If irritation persists seek medical attention.

and all the property of all these

## **SECTION 8: PERSONAL PROTECTION AND CONTROL INFORMATION**

RESPIRATORY PROTECTION:	Use an appropriate NIOSH approved respirator if airborne dust concentrations exceed the appropriate PEL or TLV. Follow respiratory protection requirements set forth in 29 CFR 1910.134.
VENTILATION PROTECTION:	Use local or general ventilation to insure exposures do not exceed PEL or TLV.
PROTECTIVE GLOVES:	Protective gloves or barrier creams recommended when in contact with dust,
EYE PROTECTION:	Sulety glasses with side shields or goggles recommended.
OTHER RECOMMENDED CONTROL METHODS:	Where possible, use vacuuming instead of dry sweeping to collect metallic dust. Avoid use of compressed air for cleaning.

## SECTION 9: SPECIAL PRECAUTIONS

The state of the s	
	Maintain good housekeeping procedures to prevent dust
	contact with dust.
OTHER PRECAUTIONS:	Clean up using methods which avoid dust generation such as
en en en en eksek kan grad	vacuum (with appropriate filter to prevent airborne dust levels from exceeding the REL or TLV). Do not use compressed air
	or allow dry eweeping of dust.

Date of preparation: April 30, 1986

For information contact:
ENVIRONMENTAL OR
SAFETY COORDINATOR

CONTRACTOR SERVICES

to a supplemental sett to soon



Issued date: May 1, 1986

#### MATERIAL SAFETY DATA SHEET LANGER OF THE PROPERTY OF

#### PRODUCT IDENTIFICATION

Distributor: American Steel, Division of American Industries, Inc. Corporate offices at 4033 NW Yeon/PO Box 10086, Portland, Oregon 97210

Trade Name (Common Name or Synonym): Carbon and Alloy Steels

Chemical Name: Iron Alloy

Form: Plates, Bars, Shapes, Tubes, Sheets Emergency Telephone: (503) 226-1511 or contact your nearest American Steel office

#### PRODUCT INGREDIENTS

			Exposu	re Limits	
Material or Component	CAS Number	% Weight	OSHA PEL (mg/m³)	ACGIH TLV (mg/m³)	
Base metal		•			
Iron (Fe)	7439-89-6	86.5-99.5	10 Oxide Fume	5 Oxide Fume	
Alloying Elements			ſ		
Aluminum (Al)	7429-90-5	<0.1-0.5	Not Established	10 Dust 5 Fume	
Bismuth (Bl)	7440-69-9	<0.2-0.5	Not Established	Not Established	
Boron (B)	7440-42-8	<0.1-1.0	15 Oxide Fume	10 Oxide Fume	
Carbon (C)	7440-44-0	<.10-1.5	Not Established	Not Established	
Chromium (Cr)	7440-47-3	<.40-10	1.0 Chrome Metal	0.5 Chrome Metel	
Columbium (Cb)	7440-25-7	<.15~.35	Not Established	Not Established	
Copper (Cu)	7440-50-8	<.30-1.90	0.1 Fume/1.0 Dust	0.2 Fume 1.0 Dust	
Lead (Pb)	7439-92-1	<.0115	.05 Dust & Fume	.15 Dust & Fume	
Manganese (Mn)	7439-96-5	<.04-0.7	5c Dust 5c Fume,	5c Dust 1 Fume	
Molybdenum (Mo)	7439-98-7	<.15-1.10	15 Insoluble Compound	10 Insoluble Compound	
Nickel (Ni)	7440-02-0	<-01-10	1 Nickel Metal	1 Nickel Metal	
Phosphorous (P)	7723-14-0	<.04012	0.1 Phosphorous	0.1 Phosphorous	
Silicon (5i)	7440-21-3	<.15-2.00	Not Established	10 Total Dust	
Sulfur (S)	7704-34-9	<.05035	13 Sulfur Dioxide	5 Sulfur Dioxide	
Vanadium (V)	7440-62-2	<.01-0.15	0.5c Dust 0.1c Fume	0.05 Dust 0.05 Fume	
Zinc Coating	7440-66-6	2 oz	5 Oxide Fume	10 Dust 5 Fume	
Aluminum Coating	7429-90-5	.05 oz	Not Established	10 Dust 5 Fume	

Note 1: The above listing is a summary of elements used in alloying steel. Various grades of steel will contain different combinations of these elements. Trace elements may also be present in minute amounts. No permissible exposure limits (PEL) or threshold limit values (TLV) exist for steel. Values shown are applicable to component

Note 2: Coatings as residual rolling lubricants and rust preventatives may be on various products. MSDS' for specific coatings are available upon request.

#### III. PHYSICAL DATA

Physical Form: Solid under normal conditions Appearance & Odor: Gray-black odorless metal Specific Gravity (H2O = 1): Approx. 7 Melting Point: Approx 2800° F

Boiling Point: Not applicable Vapor Pressure: Not applicable Vapor Density: Not applicable Acidity Alkalinity: Not applicable Solubility in Water (% by weight): Not applicable % Volitile by Volume: Not applicable

#### IV. FIRE AND EXPLOSION DATA

Flesh Point: Not applicable Auto-ignition Temperature: Not applicable Fleshable Limits in Air: Not applicable Fire & Explosion Hazards-Extinguishing Media: Steel bars, shapes, tubes, plates and sheets do not present fire or explosion hazards under normal conditions. Use fire fighting methods and materials that are appropriate for surrounding fire.

Fine metal particles, such as produced in grinding and sawing, can burn. High concentration of metallic fines in the air may present an explosion hazard. Molten metal may explode on contact with water. For these fires, use dry powder or sand extinguishing media.

### V. ENVIRONMENTAL HEALTH & SAFETY INFORMATION

#### HEALTH HAZARDS.

Steel products in their solid state present no inhalation, ingestion, or contact health hazard. Operations such as burning, welding, sawing, brazing, grinding and machining, which result in elevating the temperature of the product to, or above its melting point, or result in the generation of airborn particulates may present hazards. The major exposure hazard is inhalation. Effects of overexposure to fume and dust are as follows:

Excessive inhalation of metallic fumes and dusts may result in irritation of eyes, nose and throat. High concentrations of fumes and dusts of iron-oxide, manganese, copper, zinc, and lead may result in metal fume fever. Typical symptoms last from 12 to 48 hours and consist of a metallic taste in the mouth, dryness and irritation of the throat, chills and fever.

Chronic: Chronic and prolonged inhalation of high concentrations of fumes or dust of the following elements may lead to the conditions listed opposite the element.

Aluminum: May initiate fibrotic changes to lung tissue Bismuth: No chronic debilitating symptoms indicated Boron: No chronic debilitating symptoms indicated

Chromium: Lesions of the skin and mucous membranes, possibly cancer of the nose or

lungs-bronchogenic carcinoma

Copper: No chronic debilitating symptoms indicated

Iron: Siderosis, pulmonary effects. No chronic debilitating symptoms indicated Lead: Anemia, urinary dysfunction, weakness, constipation, nausea, nervous disorder Manganese: Bronchitis, pneumonitis, lack of coordination Molybdenum: Respiratory tract irritation, possible liver and kidney damage, bone deformity.

Nickel: Lesions of the skin and mucous membranes, possibly cancer of the nose or

lungs-bronchogenic carcinoma

Phosphorous: Necrosis of the mandible.

Sulfur (as sulfur dioxide): Edema of the lungs

Vanadium: (as vanadium pentoxide) Emphysema, pneumonia Zinc: Gastrointestinal inflamation reported in animal studies

Occupational Exposure Limits: See Products Ingredients Section II. Chromium and Nickel have been identified by the International Agency for Research on Cancer (ARC) and/or the National Toxicology Program (NTP) as potential cancer causing agents.

#### **EMERGENCY MEDICAL PROCEDURES:**

Inhalation: Remove to fresh air; if condition continues, consult a physician.

Eye Contact: Flush thoroughly with running water to remove particulate; obtain medical attention. Remove particles by washing thoroughly with soap and water. Seek medical attention Skin Contact: if condition persists.

Ingestion: If significant amounts of metal are ingested, consult physician.

#### OCCUPATIONAL PROTECTIVE MEASURES:

Respiratory Protection: Appropriate dust/mist/fume respirator should be used to avoid excessive inhalation of particulates. If exposure limits are reached or exceeded, use NIOSH approved equipment.

Protective gloves should be worn as required for welding, burning Hends, Arms and Body: or handling operations.

Eyes and Face: Safety glasses should be worn when grinding or cutting. Face shields should be worn when welding or burning.

Other Clothing and Equipment: As required depending on operations and safety codes.

#### REACTIVITY INFORMATION

Stable under normal conditions of use, storage and transporation. Incompatibility (Materials to Avoid): Reacts with strong acids to form hydrogen gas. Conditions to Avoid: Steel at temperatures above the melting point may liberate fumes containing oxides of iron and alloying elements. Avoid generation of airborn fume and dust.

#### SPILL LEAK & DISPOSAL METHODS:

Fine turnings and small chips should be swept or vacuumed. Scrap metal can be reclaimed for reuse. Used or unused product should be disposed of in accordance with federal, state, or local laws and regulations.

#### **ADDITIONAL PRECAUTIONS:**

Minimize and control operations producing dust and fume. Provide adequate exhaust ventilation and maintain good housekeeping.

#### DISCLAIMER

This MSDS is intended for use solely in safety education and environmental health training of for specification purposes. The information in this MSDS was obtained from usually reliable sources and is provided without any representation or warranty, express or implied regarding the accuracy or correctness. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. American Steel assumes not responsibility and expressly disclaims liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.

#### FOR COATINGS . RESINS AND RELATED MATERIALS

PAGE 1 DATE OF PREPARATION- 5/23/86 MANUFACTURER'S NAME : RODDA PAINT COMPANY ADDRESS : ADDRESS 6932 S.W. MACADAM AVENUE CITY, STATE : PORTLAND, OREGON 97219 EMERGENCY TELEPHONE NO. DAY: (503) 244-7512 NIGHT: (503) 645-5642 INFORMATION TELEPHONE NO. DAY: (503) 244-7512 NIGHT: (503) 645-5642 SECTION I -- PRODUCT IDENTIFICATION MANUFACTURER'S CODE IDENTIFICATION: 812 PRODUCT CLASS: ALKYD ENAMEL TRADE NAME: QUICK DRYING EQUIPMENT ENAMEL - SAFETY RED HMIS INFORMATION \*\* HEALTH- 3\* FLAMMABILITY- 3 REACTIVITY- O FERSONAL PROTECTIVE EQUIPMENT- J SECTION II HAZARDOUS INGREDIENTS . % BY TLV-(TWA) VARUK WEIGHT PPM MG/M3 LEL PRESSURE MMHG @68DF ---- INGREDIENT MATERIAL DESCRIPTION CAS# MMHG @68DF | 50 - 100 | 250.00|NOT EST| 1.0| ALKYD RESIN SOLUTION | | .5 - 5 | 100.00|NOT EST| 1.0| OLEFIN POLYMER 6.00 PETROLEUM DISTILLATE 164742-89-8 | 25 - 35 | 300.00|1350.00| 1.0| Me 1040 1880 41 h 4145 4101 1664 4141 4100 4114 11 m 4146 4141 4101 4101 4117 4117 4117 4110 6 DI METHYL BENZENE | .5 - 5 | 200.00|NOT EST| FEEDER DRIER .10 SECTION III PHYSICAL DATA HIGH LOW 203.0 BOILING RANGE 384.0 VAPOR PRESSURE 50.00
VAPOR DENSITY HEAVIER THAN AIR
EVAPORATION RATE FASTER THAN BUTYL ACETATE
WEIGHT PER GALLON 7.41

67+40

% VOLATILE BY VOLUME % VOLATILE BY WEIGHT

APPEARANCE-ODOR- RED LIQUID

N UFACTURER'S CODE: 812

DATE OF PREPARATION- 5/23/86

SECTION IV --- FIRE AND EXPLOSION HAZARD DATA
FLAMMABILITY CLASSIFICATION OSHA-CLASS IB DOT- FLAMMABLE LIQUID
LOWEST FLASHPOINT T.C.C. 22.0 LOWER EXPLOSION LEVEL (LEL) .9

EXTINGUISHING MEDIA: (Yes)-FOAM (Yes)-ALCOHOL FOAM (Yes)-CO2 (Yes)-DRY CHEMICAL (Yes)-WATER FOG (N/A)-OTHER

Blanket fire with one of the above extinguishing media.

UNUSAL FIRE AND EXPLOSION HAZARDS: Vapors are heavier than air and may travel along the ground or be moved by ventilation and ignited by heat, pilot lights, other flames and ignition sources at locations distant from material handling point. Never use welding or cutting torch on or near drum (even empty) because product (just residue) can ignite EXPLOSIVELY!

SPECIAL FIRE FIGHTING FROCEDURES:For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment. Self-contained breathing apparatus with a full facepiece operated in pressure-demand or other positive pressure mode to protect against the hazardous effects of normal products of combustion or oxygen deficiency.

#### SECTION V --- HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE: FOR PRODUCT-EYES: Can cause irritation, redness,

tearing, blurred vision. SKIN: Prolonged or repeated contact can cause moder a virritation, defatting, dermatitis.

FreeMARY ROUTE(S) OF ENTRY: (Yes)-DERMAL (Yes)-INHALATION (Yes)-INGESTION BREATHING: Excessive breathing of vapors can cause masal and respiratory irritation, dizziness, weakness, fatigue, nausea, headache, possible unconsciousness, and even asphyxiation. SWALLOWING: Can cause gastrointestinal irritation, nausea, vomiting, and diarrhea. Aspiration of material into lungs can cause chemical pneumonitis which can be fatal.

EMERGENCY & FIRST AID PROCEDURES: SKIN- Wash exposed area with soap & water EYES-Flush with large amounts of water. INGESTION- Do not induce vomitingget medical attention! INHALATION-If affected, remove to fresh air. If breathing is difficult, administer oxygen. If breathing has stopped, give artificial respiration. Get medical attention.

MEDICAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE: None known.

#### SECTION VI --- REACTIVITY DATA

STABILITY: ( )-UNSTABLE (Yes)-STABLE
HAZARDOUS POLYMERIZATION ( )-MAY OCCUR (XXX)- WILL NOT OCCUR
HAZARDOUS DECOMPOSITION PRODUCTS- Normal combustion forms carbon dioxide &
water vapor; incomplete combustion can produce carbon monoxide.
CONDITIONS TO AVOID-Excessive temperatures.
INCOMPATIBILITY (MATERIALS TO AVOID)- Strong oxidizing agents (Nitric Acid.
Permanganates, MEK Peroxide, Etc.)

SECTION VII SPILL OR LEAK PROCEDURES

DATE OF PREPARATION— 5/23/86 STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Eliminate all ignition sources (flares, flames including pilot lights & electrical sparks). Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop spill at source, dike area of spill to prevent spreading, pump liquid to salvage tank. Remaining liquid may be taken up on sand, clay, earth, floor absorbent, or other absorbent material and shoveled into containers. Prevent run-off to sewers. streams, or other bodies of water.

WASTE DISPOSAL METHOD— Destroy by liquid incineration. Material collected

WASTE DISPOSAL METHOD— Destroy by tiquid incineration. Material collected on absorbent material may be deposited in an approved toxic substance landfill in accordance with local, state, and federal regulations.

#### SECTION VIII-- SAFE HANDLING AND USE INFORMATION

RESPIRATORY PROTECTION: If TLV of the product or any component is exceeded. a NIOSH/MESA jointly approved self-contained breathing apparatus with a full face piece operated in pressure demand or other positive pressure mode is advised; however, OSHA regulations also permit other NIOSH/MESA respirators under specified conditions. (See your safety equipment supplier). VENTILATION: Frovide sufficient mechanical and/or local exhaust to maintain exposure below TLV(s).

EYE PROTECTION: Chemical splash goggles in compliance with OSHA regulations are advised.

PROTECTIVE GLOVES: Wear resistant gloves such as:, BUNA-N.

OTTER PROTECTIVE EQUIPMENT: To prevent repeated or prolonged skin contact. War impervious clothing and boots.

HYGENIC PRACTICES: Wash hands before eating or using washroom.

#### SECTION IX--- SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in a cool, dry area. Keep away from heat, sparks, and open flame. Keep containers closed when not in use. Use only with adequate ventilation.

OTHER PRECAUTIONS: Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid. and/or solid), all hazard precautions given in this data sheet must be observed.

READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL!

#### FOR COATINGS , RESINS AND RELATED MATERIALS

DATE OF PREPARATION- 5/23/86 PAGE 1 MANUFACTURER'S NAME : RODDA PAINT COMPANY ADDRESS : 6932 S.W. MACADAM AVENUE ADDRESS CITY, STATE : FORTLAND, OREGON 97219 EMERGENCY TELEPHONE NO. DAY: (503) 244-7512 NIGHT: (503) 645-5642 INFORMATION TELEPHONE NO. DAY: (503) 244-7512 NIGHT: (503) 645-5642 SECTION I -- PRODUCT IDENTIFICATION MANUFACTURER'S CODE IDENTIFICATION: 8366 FRODUCT CLASS: ACRYLIC ENAMEL TRADE NAME: UNIQUE II LATEX ENAMEL - DEEPTONE BASE HMIS INFORMATION \*\* HEALTH- 2 FLAMMABILITY- 0 REACTIVITY- O PERSONAL PROTECTIVE EQUIPMENT- C SECTION II HAZARDOUS INGREDIENTS ---- INGREDIENT % BY TLV-(TWA) VAPOR MATERIAL DESCRIPTION CAS# WEIGHT FFM MG/M3 LEL PRESSURE MMHG @68DF POLYACRYLATE POLYMER | 1 .5 - 5 | .50 NOT EST| | 17.00 1,2-ETHANEDIOL • 08 RUTILE TITANIUM DIOXIDE | 13463-67-7 | 5 - 10 | NOT EST| 10.00| ) ni area como incor area como como como como como cini deli mare desti atea seta delli rico cil i libi bibbi llad inde incor esta cher desti como 1817 8717 1817 7070 1817 7070 1817 7070 |1332-58-7 | 5 - 10 |NOT EST| 10.00| ALUMINUM SILICATE 2.00 MAGNESIUM SILICATE |14801-96-6 | .5 - 5 |NOT EST| | 50 - 100 | 25.00|NOT EST| | 17.00 ACRYLIC EMULSION RESIN | | .5 - 5 | 50.00|NOT EST| | 17.50 AQUEOUS ACRYLIC POLYMER | |111-76-2 | .5 - 5 | 50.00|NOT EST| 1.1| .60 2-BUTOXYETHANOL. SECTION III PHYSICAL DATA BOTLING RANGE HIGH 387.0 LOW 212.0
VAPOR PRESSURE 17.50
VAPOR DENSITY HEAVIER THAN AIR
EVAPORATION RATE EQUAL TO BUTYL ACETATE
WEIGHT PER GALLON 10.14
% VOLATILE BY VOLUME 62.27
% VOLATILE BY WEIGHT 52.17

APPEARANCE-ODOR- WHITE LIQUID

M UFACTURER'S CODE: 8336

DATE OF PREPARATION- 5/23/86

SECTION IV -- FIRE AND EXPLOSION HAZARD DATA
FLAMMABILITY CLASSIFICATION OSHA-CLASS III-A DOT- COMBUSTIBLE LIQUID
LOWEST FLASHPOINT T.C.C. 150.0 LOWER EXPLOSION LEVEL (LEL) 1.1

EXTINGUISHING MEDIA:(XX)-FOAM (XX)-ALCOHOL FOAM (XX)-CO2 (XX)-DRY CHEMICAL (XX)-WATER FOG Product will not support combustion.

UNUSAL FIRE AND EXPLOSION HAZARDS: Product will not burn but may spatter if temperature exceeds boiling point. Dried paint films are capable of burning giving off oxides of carbon and/or nitrogen.

SPECIAL FIRE FIGHTING PROCEDURES: NONE

#### SECTION V --- HEALTH HAZARD DATA

EFFECTS OF OVER EXPOSURE: INHALATION: Adverse health effects from vapors or spray mists in poorly ventilated areas may include irritation of the mucous membranes of the nose, throat, respiratory tract and symptoms of headache and nausea.

SKIN CONTACT: Prolonged or repeated contact with product may cause skin irritation.

EYE CONTACT: Direct contact with product may result in eye irritation. INGESTION: May cause abdominal discomfort or pain, dizziness, malaise, and central nervous system depression. Severe kidney damage follows the swallow irr of large volumes of ethylene glycol.

E.\_RGENCY AND FIRST AID PROCEDURES: EYE & SKIN CONTACT: Wash eyes with plenty of water for 15 minutes and consult physician if irritation persists Wash skin thoroughly with soap and water.

INHALATION: Remove subject to fresh air and consult a physician.
INGESTION: If conscious, give two glasses of water and induce vomiting.

Call a physician immediately.

NOTES TO PHYSICIAN: The principal toxic effects of ethylene glycol, when swallowed, are kidney damage and metabolic acidosis. Ethanol is antidotal. and its early administration may block the formation of nephrotoxic metabolites of ethylene glycol in the liver.

SECTION VI --- REACTIVITY DATA

STABILITY: ( )-UNSTABLE (XX)-STABLE

HAZARDOUS POLYMERIZATION ( )-MAY OCCUR (XX)-WILL NOT OCCUR

HAZARDOUS DECOMPOSITION PRODUCTS— Burning of dried paint films may produce oxides of carbon and/or nitrogen.

CONDITIONS TO AVOID: None

INCOMPATIBILITY (MATERIALS TO AVOID)— Normally unreactive; however, avoid strong bases at high temperature, strong acids, strong oxidizing agents and materials reactive with hydroxyl compounds.

SECTION VII SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Wear suitable

DATE OF PREPARATION— 5/23/86 protective equipment. Small spills should be flushed with large quantities of water. Larger spills should be collected for disposal. Keep spills out of sewers and open bodies of water. Floors may be slippery, care should be exercised to avoid falls.

WASTE DISPOSAL METHOD: The normal methods of disposing of unused paint apply, in accordance with Federal, State, and Local regulations. At low concentrations in water, ethylene glycol is readily biodegradable in a biological wastewater treatment plant. Approved landfill recommended for large spills.

SECTION VIII— SAFE HANDLING AND USE INFORMATION RESPIRATORY PROTECTION: None is required if good ventilation is maintained. Otherwise wear MSHA/NIOSH approved respirator suitable for organic vapors and/or mist concentrations encountered. VENTILATION: Use only with adequate ventilation. Mechanical local exhaust at point of contaminant (vapor or mist) release. Maintain TLV below 50 ppm (125 mg/m3) ceiling, for vapor and mist combined (ACGIH 1984-85). PROTECTIVE GLOVES: Impervious EYE PROTECTION: Chemical safety goggles. OTHER PROTECTIVE EQUIPMENT: As necessary to avoid skin contact. HYGIENIC FRACTICES: Wash thoroughly with soap and water after use.

#### SECTION IX-- SPECIAL PRECAUTIONS

F—CAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in a coot dry area. Keep away from excessive heat as containers may rupture or burst. KEEP FROM FREEZING! Froduct may coagulate. OTHER PRECAUTIONS: NONE

GAM 11/22/85

#### FOR COATINGS , RESINS AND RELATED MATERIALS

DATE OF PREPARATION- 5/23/86 PAGE 1 MANUFACTURER'S NAME : RODDA PAINT COMPANY ADDRESS : ADDRESS 6932 S.W. MACADAM AVENUE CITY, STATE : FORTLAND, OREGON 97219 EMERGENCY TELEPHONE NO. DAY: (503) 244-7512 NIGHT: (503) 645-5642 INFORMATION TELEPHONE NO. DAY: (503) 244-7512 NIGHT: (503) 645-5642 . SECTION I -- PRODUCT IDENTIFICATION MANUFACTURER'S CODE IDENTIFICATION: 13150 PRODUCT CLASS: EPOXY ENAMEL. TRADE NAME: ROPON OLOSS ENAMEL - WHITE HMIS INFORMATION \*\* HEALTH- 2 FLAMMABILITY- 3 REACTIVITY- O PERSONAL PROTECTIVE EQUIPMENT- H SECTION II HAZARDOUS INGREDIENTS ---- INGREDIENT % BY TLV--(TWA) VAPOR WEIGHT FPM MG/M3 LEL PRESSURE MATERIAL DESCRIPTION CAS# MMHG @68DF # The state of the | 35 - 50 | 5.00|NOT EST| 1.0| 40.00 EPOXY RESIN SOLUTION | 1108-10-1 1.5 - 5 | 50.00| 150.00| 1.4| UREA-FORMALDEHYDE RESIN | 4.39 | 15 - 20 | 50.00|NOT EST| 1.0| 33.00 THINNER BLEND 1 WE AND A TO SHEET THE AND SHEET FROM AND A SHEET FROM A S RUTILE TITANIUM DIOXIDE |13463-67-7 | 25 - 35 |NOT EST| 10.00| SECTION III PHYSICAL DATA HIGH 342.0 LOW 230.0 BOILING RANGE VAFOR DENSITY HEAVIER THAN AIR EVAFORATION RATE FASTER THAN BUTYL ACETATE WEIGHT PER GALLON 11.47

48.12

% VOLATILE BY VOLUME % VOLATILE BY WEIGHT

APPEARANCE-ODOR- WHITE LIQUID

UFACTURER'S CODE: 13150

DATE OF PREPARATION- 5/23/86

SECTION IV --- FIRE AND EXPLOSION HAZARD DATA
FLAMMABILITY CLASSIFICATION OSHA-CLASS IB DOT- FLAMMABLE LIQUID
LOWEST FLASHFOINT T.C.C. 41.0 LOWER EXPLOSION LEVEL (LEL) 1.0

EXTINGUISHING MEDIA: (Yes)-FOAM (Yes)-ALCOHOL FOAM (Yes)-CO2 (Yes)-DRY CHEMICAL (Yes)-WATER FOG (N/A)-OTHER

Blanket fire with one of the above extinguishing media.

UNUSAL FIRE AND EXPLOSION HAZARDS: Vapors are heavier than air and may travel along the ground or be moved by ventilation and ignited by heat, pilot lights, other flames and ignition sources at locations distant from material handling point. Never use welding or cutting torch on or near drum (even empty) because product (just residue) can ignite EXPLOSIVELY!

SPECIAL FIRE FIGHTING PROCEDURES:For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment. Self-contained breathing apparatus with a full facepiece operated in pressure-demand or other positive pressure mode to protect against the hazardous effects of normal products of combustion or oxygen deficiency.

#### SECTION V --- HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE: FOR PRODUCT-EYES:Can cause irritation, redness, tearing, blurred vision. SKIN:Frotonged or repeated contact can cause moder a rititation, defatting, dermatitis.

Fighter MARY ROUTE(S) OF ENTRY:(Yes)-DERMAL (Yes)-INHALATION (Yes)-INGESTION BREATHING: Excessive breathing of vapors can cause masal and respiratory irritation, dizziness, weakness, fatigue, nausea, headache, possible uncon-

BREATHING: Excessive breathing of vapors can cause masal and respiratory irritation, dizziness, weakness, fatigue, mausea, headache, possible unconsciousness, and even asphyxiation. SWALLOWING: Can cause gastrointestinal irritation, mausea, vomiting, and diarrhea. Aspiration of material into lungs can cause chemical pneumonitis which can be fatal.

EMERGENCY & FIRST AID PROCEDURES: SKIN- Wash exposed area with soap & water EYES-Flush with large amounts of water. INGESTION- Do not induce vomitingget medical attention! INHALATION-If affected, remove to fresh air. If breathing is difficult, administer oxygen. If breathing has stopped, give artificial respiration. Get medical attention.

MEDICAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE: None known.

#### SECTION VI -- REACTIVITY DATA

STABILITY: ( )-UNSTABLE (Yes)-STABLE
HAZARDOUS FOLYMERIZATION ( )-MAY OCCUR (XXX)- WILL NOT OCCUR
HAZARDOUS DECOMPOSITION PRODUCTS- Normal combustion forms carbon dioxide & water vapor; incomplete combustion can produce carbon monoxide.
CONDITIONS TO AVOID-Excessive temperatures.
INCOMPATIBILITY (MATERIALS TO AVOID)- Strong oxidizing agents (Nitric Acid

INCOMPATIBILITY (MATERIALS TO AVOID)— Strong exidizing agents (Nitric Acid. Permanganates, MEK Perexide, Etc.)

SECTION VII SPILL OR LEAK PROCEDURES

DATE OF PREPARATION- 5/23/86 STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Eliminate all ignition sources (flares, flames including pilot lights & electrical sparks). Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop spill at source, dike area of spill to prevent spreading, pump liquid to salvage tank. Remaining liquid may be taken up on sand, clay, earth, floor absorbent, or other absorbent material and shoveled into containers. Prevent run-off to sewers. streams, or other bodies of water.

WASTE DISPOSAL METHOD— Destroy by liquid incineration. Material collected on absorbent material may be deposited in an approved toxic substance

SECTION VIII-- SAFE HANDLING AND USE INFORMATION

RESPIRATORY FROTECTION: If TLV of the product or any component is exceeded. a NIOSH/MESA jointly approved self-contained breathing apparatus with a full face piece operated in pressure demand or other positive pressure mode is advised; however, OSHA regulations also permit other NIOSH/MESA respirators under specified conditions. (See your safety equipment supplier). VENTILATION: Frovide sufficient mechanical and/or local exhaust to maintain exposure below TLV(s).

landfill in accordance with local, state, and federal regulations.

EYE FROTECTION: Chemical splash goggles in compliance with OSHA regulations are advised.

PROTECTIVE GLOVES: Wear resistant gloves such as:, BUNA-N.

OF 'ER PROTECTIVE EQUIPMENT: To prevent repeated or prolonged skin contact.

www impervious clothing and boots.

HYGENIC PRACTICES: Wash hands before eating or using washroom.

#### SECTION IX-- SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in a cool, dry area. Keep away from heat, sparks, and open flame. Keep containers closed when not in use. Use only with adequate ventilation.

OTHER PRECAUTIONS: Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid. and/or solid), all hazard precautions given in this data sheet must be observed.

READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL!

#### FOR COATINGS . RESINS AND RELATED MATERIALS

DATE OF PREPARATION- 5/23/86

PAGE 1

MANUFACTURER'S NAME : RODDA PAINT COMPANY

ADDRESS :

ADDRESS : CITY, STATE : 6932 S.W. MACADAM AVENUE

PORTLAND, OREGON 97219

EMERGENCY TELEPHONE NO: DAY: (503) 244-7512 NIGHT: (503) 645-5642

INFORMATION TELEPHONE NO. DAY: (503) 244-7512 NIGHT: (503) 645-5642

THE PART THAT ARE A TOTAL OFFICE AND THAT ARE A TOTAL OFFICE AND THAT ARE A TOTAL AND THAT 
SECTION I -- PRODUCT IDENTIFICATION

MANUFACTURER'S CODE IDENTIFICATION: 13182

PRODUCT CLASS: EPOXY ENAMEL

TRADE NAME: ROPON GLOSS ENAMEL - MEDIUM YELLOW /

HMIS INFORMATION \*\* HEALTH- 3\* FLAMMABILITY- 3

VAPOR DENSITY HEAVIER THAN AIR EVAPORATION RATE FASTER THAN BUTYL ACETATE WEIGHT PER GALLON 11.91

% VOLATILE BY VOLUME 50.41 % VOLATILE BY WEIGHT 29.70 APPEARANCE-ODOR- YELLOW LIQUID

11.91

REACTIVITY- O PERSONAL PROTECTIVE EQUIPMENT- J

S	ECTION II	HA	ZARDO	ous I	NGF	REDI	ENTS					
INGREDIENT	CAS#	B 1000 4444 4	•	& BY EIGHT			TL.V-		4) /M3		FR	APOR ESSURE @68DF
EPOXY RESIN SOLUTION	1108-10-1	1	35 -	- 50	]	5	.001	דטא	EST	1.	01	40.00
THINNER BLEND	1	1	15 -	- 20	1	50	.001	NOT	EST	1.	01	33.00
UREA-FORMALDEHYDE RESIN	1	ı	.5 -	- 5	1	50	.001	150	100.0	1.	4	4.39
OLEFIN FOLYMER	[	1	.5 .	- 5	1	100	.001	NOT	EST	1.	01	6.00
LEAD CHROMATE	34 1344-37-	-21	32	47	11	tot l	EST	H	+05}	we i <del>es</del> ies een	i	1004 ALLE ERIC MAL STAT STOL
IRON OXIDE HYDRATE	1309-37-1	-	•5	- 5	۱۱	OT I	ESTI	15	5.001			ALL LAS 1840 FALL 1843 AND
RUTILE TITANIUM DIOXIDE	113463-67-7	1	.5 -	- 5	۱۱	10T	ESTI	1.0	100.0	- 1.54 + 1.64 + 1.64 + 1.64		***************************************
CALCIUM CARBONATE	1317-63-3	1	.5	- 5	4	OT (	EST	1.	5.001	1000 1900 1100 1100 1100 1000 1100 1100		**** **** **** **** ****
	SECTION II	: I.	FH	/SICA	L I	)ATA	<b>664 484- 4864 888</b> 4	**** **** **** *		**************	*	
BOILING RANGE VAPOR PRESSURE VAPOR DENSITY	HIGH 4( HEAVIER	) • ()	φ	•	AN 14	L	שמ	2:	30.0	PART THE THE ISSUE AND		

Appendix33-000300

UFACTURER'S CODE: 13182

EXTINGUISHING MEDIA: (YES)-FOAM

DATE OF PREPARATION- 5/23/86

(YES)-ALCOHOL FOAM (YES)-CO2

SECTION IV -- FIRE AND EXPLOSION HAZARD DATA
FLAMMABILITY CLASSIFICATION OSHA-CLASS IR DOT- FLAMMABLE LIQUID
LOWEST FLASHPOINT T.C.C. 41.0 LOWER EXPLOSION LEVEL (LEL) 1.0

(YES)-DRY CHEMICAL (YES)-WATER FOG (N/A)-OTHER Blanket fire with one of the above extinguishing media. UNUSAL FIRE AND EXPLOSION HAZARDS: Vapors are heavier than air and may travel along the ground or be moved by ventilation and be ignited by heat, pilot lights, other flames and ignition sources at locations distant from material handling point. Never use welding or cutting torch on or near drum (even empty) because product (just residue) can ignite EXPLOSIVELY! SPECIAL FIRE FIGHTING PROCEDURES: For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment. Self-contained breathing apparatus with a full facepiece operated in pressure-demand or other positive pressure mode to protect against the hazardous effects of normal products of combustion or oxygen deficiency. In the event of fire, lead oxide (FbO) and chromium oxide (Cr2O3) could be produced.

#### SECTION V -- HEALTH HAZARD DATA

ETTECTS OF OVEREXPOSURE: FOR PRODUCT-EYES: Can cause irritation, redness. twring, blurred vision. SKIN: Prolonged or repeated contact can cause moderate irritation, defatting, dermatitis. Contains lead. Repeated and prolonged inhalation may cause delayed injury. See section II. See 29 CFR 1910.1025, Lead. Long term overexposure may cause cancer. PRIMARY ROUTES OF ENTRY: (YES)-DERMAL (YES)-INHALATION (YES)-INGESTION BREATHING: Excessive breathing of vapors can cause nasal and respiratory irritation, dizziness, weakness, fatigue, nausea, haedache, possible unconsciousness, and even asphyxiation. SWALLOWING: Can cause gastrointestinal irritation, nausea, vomiting, and dirrhea. Aspiration of material into lungs can cause chemical pneumonitis which can be fatal. EMERGENCY & FIRST AID PROCEDURES: SKIN-Wash exposed area with soap & water. EYES-Flush with large amounts of water. INGESTION-Do not induce vomitingget medical attention! INHALATION-If affected, remove to fresh air. If breathing is difficult, administer oxygen. If breathing has stopped, give

artificial respiration. Get medical attention!
MEDICAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE: As for lead above.
SECTION VI —— REACTIVITY DATA

STABILITY: ( )-UNSTABLE (YES)-STABLE
HAZARDOUS FOLYMERIZATION ( )-MAY OCCUR (XXX) WILL NOT OCCUR
HAZARDOUS DECOMPOSITION PRODUCTS-Normal combustion forms carbon dioxide & water vapor; incomplete combustion can produce carbon monoxide. Lead and chromium oxides formed following ignition.
CONDITIONS TO AVOID: Excessive temperatures.

DATE OF PREPARATION- 5/23/86
INCOMPATIBILITY (MATERIALS TO AVOID)—Strong oxidizing agents (Nitric Acid.
Permanganates, MEK Preoxide, Etc.)

#### SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Eliminate all ignition sources (flares, flames, including pilot lights & electrical sparks.) Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop spill at source, dike area of spill to prevent spreading, pump liquid to salvage tank. Remaining liquid may be taken up on sand, clay earth, floor absorbent or other absorbent material and shoveled into conatiners. Frevent run-off to sewers. streams, or other bodies of water.

WASTE DISPOSAL METHOD: Destroy by liquid incineration. Material collected on absorbent material may be deposited in an approved toxic substance landfill in accordance with local, state, and federal regulations.

#### SECTION VIII-- SAFE HANDLING AND USE INFORMATION

RESPIRATORY PROTECTION: If TLV of the product or any component is exceeded a NIOSH/MESA jointly approved self-contained breathing apparatus with a full face piece operated in pressure demand or other positive pressure mode is advised; however, OSHA regulations also permit other NIOSH/MESA respirators under specified conditions. (See your safety equipment supplier.) VTILATION: Provide sufficient mechanical and/or local exhaust to maintain exposure below TLV(S).

EYE PROTECTION: Chemical splash goggles in compliance with OSHA regulations are advised.

PROTECTIVE GLOVES: Wear resistant gloves such as; BUNA-N.

OTHER PROTECTIVE EQUIPMENT: To prevent repeated or prolonged skin contact. wear impervious clothing and boots.

HYGENIC PRACTICES: Wash hands before eating, smoking or using washroom.

#### SECTION IX-- SPECIAL PRECAUTIONS

FRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in a cool, dry area. Keep away from heat, sparks, and open flame. Keep containers closed when not in use. Use only with adequate ventilation.

OTHER PRECAUTIONS: Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid. and/or solid), all hazard precautions given in this data sheet must be observed.

READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL!!!
GAM 11/5/85

FOR COATINGS . RESINS AND RELATED MATERIALS DATE OF PREPARATION- 5/23/86 PAGE 1 MANUFACTURER'S NAME : RODDA PAINT COMPANY ADDRESS : ADDRESS 6932 S.W. MACADAM AVENUE CITY, STATE : PORTLAND, OREGON 97219 EMERGENCY TELEPHONE NO. DAY: (503) 244-7512 NIGHT: (503) 645-5642 INFORMATION TELEPHONE NO. DAY: (503) 244-7512 NIGHT: (503) 645-5642 SECTION I -- PRODUCT IDENTIFICATION MANUFACTURER'S CODE IDENTIFICATION: 19244 PRODUCT CLASS: EPOXY ENAMEL TRADE NAME: ROPON STRONTIUM CHROMATE PRIMER - RED OXIDE HMIS INFORMATION \*\* HEALTH- 3\* FLAMMABILITY- 3 REACTIVITY- O PERSONAL PROTECTIVE EQUIPMENT- J THE OFFICE AND THE POST THE PO SECTION II HAZARDOUS INGREDIENTS ---- INGREDIENT % BY TLV-(TWA) VAPOR WEIGHT PPM MG/M3 LEL PRESSURE MATERIAL DESCRIPTION CAS# MMHG @ABDE |108-10-1 | 35 - 50 | 5.00|NOT EST| 1.0| [37300-23-5] 5.23 [NOT EST] .05]

EPOXY RESIN SOLUTION STRONTIUM CHROMATE IRON OXIDE PIGMENT | 1309-37-1 | 10 - 15 | NOT EST| 15.00} | 20 - 25 | 50.00|NOT EST| 1.0| THINNER BLEND UREA-FORMALDEHYDE RESIN | |.5-5|50.00|150.00|1.4|4.39

MAGNESIUM SILICATE |14801-96-6 | 5 - 10 |NOT EST| 2.00| DIATOMACEOUS SILICA 

NEPHELINE SYENITE |37244-96-5 | .5 - 5 |NOT EST| 10.00|

SECTION III FHYSICAL DATA

HIGH 342.0 BOILING RANGE LOW 230.0

VAPOR PRESSURE VAPOR DENSITY 40.00 HEAVIER THAN AIR

VAPOR DENSITY HEAVIER THAN AIR
EVAPORATION RATE FASTER THAN BUTYL ACETATE
WEIGHT PER GALLON 11.74 % VOLATILE BY VOLUME % VOLATILE BY WEIGHT 49.96 30.87

AFFEARANCE-ODOR- RED LIQUID

UFACTURER'S CODE: 19244

DATE OF PREPARATION- 5/23/86

SECTION IV -- FIRE AND EXPLOSION HAZARD DATA
FLAMMABILITY CLASSIFICATION OSHA-CLASS IB DOT- FLAMMABLE LIQUID
LOWEST FLASHPOINT T.C.C. 41.0 LOWER EXPLOSION LEVEL (LEL) 1.0

EXTINGUISHING MEDIA: (Yes)-FOAM (Yes)-ALCOHOL FOAM (Yes)-CO2 (Yes)-DRY CHEMICAL (Yes)-WATER FOG (N/A)-OTHER

Blanket fire with one of the above extinguishing media.

UNUSAL FIRE AND EXFLOSION HAZARDS: Vapors are heavier than air and may travel along the ground or be moved by ventilation and ignited by heat, pilot lights, other flames and ignition sources at locations distant from material handling point. Never use welding or cutting torch on or near drum (even empty) because product (just residue) can ignite EXFLOSIVELY!

SPECIAL FIRE FIGHTING PROCEDURES:For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment. Self-contained breathing apparatus with a full facepiece operated in pressure-demand or other positive pressure mode to protect against the hazardous effects of normal products of combustion or oxygen deficiency.

#### SECTION V -- HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE: FOR PRODUCT-EYES:Can cause irritation, redness, tearing, blurred vision. SKIN:Prolonged or repeated contact can cause moder a' irritation, defatting, dermatitis.

F\_MARY ROUTE(S) OF ENTRY:(Yes)-DERMAL (Yes)-INHALATION (Yes)-INGESTION BREATHING: Excessive breathing of vapors can cause nasal and respiratory irritation, dizziness, weakness, fatigue, nausea, headache, possible unconsciousness, and even asphyxiation. SWALLOWING: Can cause gastrointestinal irritation, nausea, vomiting, and diarrhea. Aspiration of material into lungs can cause chemical pneumonitis which can be fatal. EMERGENCY & FIRST AID PROCEDURES: SKIN- Wash exposed area with soap & water EYES-Flush with large amounts of water. INGESTION- Do not induce vomiting-get medical attention! INHALATION-If affected, remove to fresh air. If breathing is difficult, administer oxygen. If breathing has stopped, give artificial respiration. Get medical attention.

MEDICAL CONDITIONS FRONE TO AGGRAVATION BY EXPOSURE: None known.

#### SECTION VI -- REACTIVITY DATA

STABILITY: ( )-UNSTABLE (Yes)-STABLE
HAZARDOUS POLYMERIZATION ( )-MAY OCCUR (XXX)- WILL NOT OCCUR
HAZARDOUS DECOMPOSITION PRODUCTS- Normal combustion forms carbon dioxide & water vapor; incomplete combustion can produce carbon monoxide.
CONDITIONS TO AVOID-Excessive temperatures.
INCOMPATIBILITY (MATERIALS TO AVOID)- Strong oxidizing agents (Nitric Acid. Permanganates, MEK Peroxide, Etc.)

SECTION VII SPILL OR LEAK PROCEDURES

DATE OF PREPARATION— 5/23/86 STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Eliminate all ignition sources (flares, flames including pilot lights & electrical sparks). Fersons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop spill at source, dike area of spill to prevent spreading, pump liquid to salvage tank. Remaining liquid may be taken up on sand, clay, earth, floor absorbent, or other absorbent material and shoveled into containers. Prevent run-off to sewers. streams, or other bodies of water.

WASTE DISPOSAL METHOD- Destroy by liquid incineration. Material collected on absorbent material may be deposited in an approved toxic substance tandfill in accordance with local, state, and federal regulations.

#### SECTION VIII-- SAFE HANDLING AND USE INFORMATION

RESPIRATORY PROTECTION: If TLV of the product or any component is exceeded, a NIOSH/MESA jointly approved self-contained breathing apparatus with a full face piece operated in pressure demand or other positive pressure mode is advised; however, OSHA regulations also permit other NIOSH/MESA respirators under specified conditions. (See your safety equipment supplier). VENTILATION: Provide sufficient mechanical and/or local exhaust to maintain exposure below TLV(s).

EYE PROTECTION: Chemical splash goggles in compliance with OSHA regulations are advised.

PROTECTIVE GLOVES: Wear resistant gloves such as:, BUNA-N.

OTTER PROTECTIVE EQUIPMENT: To prevent repeated or protonged skin contact. weer impervious clothing and boots.

HYGENIC PRACTICES: Wash hands before eating or using washroom.

#### SECTION IX--- SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in a cool, dry area. Keep away from heat, sparks, and open flame. Keep containers closed when not in use. Use only with adequate ventilation.

OTHER PRECAUTIONS: Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid. and/or solid), all hazard precautions given in this data sheet must be observed.

READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL!

#### FOR COATINGS , RESINS AND RELATED MATERIALS

	DATE OF PREPA	RATION- 5/2	23/86		PAGE	1.
MANUFACTURER'S NAME :	RODDA PAINT COM	PANY				
ADDRESS :						
ADDRESS : CITY,STATE :	6932 S.W. MACAD PORTLAND, OREGO					
EMERGENCY TELEPHONE NO INFORMATION TELEPHONE	NO: DAY: (503	) 244-7512	NIGHT:	(503) 645	-5642	
\$	SECTION I PRO	DUCT IDENTI	[FICATION	4		
MANUFACTURER'S CODE IN PRODUCT CLASS: THINNE TRADE NAME: *** HMIS INFORMATION ***	DENTIFICATION: 2 ER HEM	<b>73</b> 07 -	3			
	SECTION II H				-ana anna 1700 1977 1997 1999 1999	
TNORFTITENT		% BY	771 (	J (TMA)		UAPOR
MATERIAL DESCRIPTION	CAS#	WEIGHT	PPM	MG/M3	MM	PRESSURE HG @68DF
DIMETHYL KETONE	167-64-1	1 50 - 100	1 750.00	100.001	2+61	186.00
**************************************	SECTION III	PHYSICAL	DATA			
BOILING RANGE		133.0			Print (1700 1770 1770 1770 1780 1880 1880 1880	***************************************
VAPOR PRESSURE						
	HEAVIER					
EVAPORATION RAT	E FASTER T	HAN BUTYL A	ACETATE			
WEIGHT PER GALL						
	OLUME 100.	00				
% VOLATILE BY W		00				
	ለማር የሚሊያን ተጠም የነበር የም					

AFFEARANCE-ODOR- CLEAR LIQUID

UFACTURER'S CODE: 273

DATE OF PREPARATION- 5/23/86

SECTION IV --- FIRE AND EXPLOSION HAZARD DATA
FLAMMABILITY CLASSIFICATION OSHA-CLASS IB DOT- FLAMMABLE LIQUID
LOWEST FLASHFOINT T.C.C. .9 LOWER EXPLOSION LEVEL (LEL) 2.6

EXTINGUISHING MEDIA: (Yes)-FOAM (Yes)-ALCOHOL FOAM (Yes)-CO2 (Yes)-DRY CHEMICAL (Yes)-WATER FOG (N/A)-OTHER

Blanket fire with one of the above extinguishing media.

UNUSAL FIRE AND EXPLOSION HAZARDS: Vapors are heavier than air and may travel along the ground or be moved by ventilation and ignited by heat, pitot lights, other flames and ignition sources at locations distant from material handling point. Never use welding or cutting torch on or near drum (even empty) because product (just residue) can ignite EXPLOSIVELY!

SPECIAL FIRE FIGHTING PROCEDURES:For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment. Self-contained breathing apparatus with a full facepiece operated in pressure-demand or other positive pressure mode to protect against the hazardous effects of normal products of combustion or oxygen deficiency.

#### SECTION V -- HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE: FOR PRODUCT-EYES:Can cause irritation, redness, tearing, blurred vision. SKIN:Prolonged or repeated contact can cause moder a 'virritation, defatting, dermatitis.

F\_MARY ROUTE(S) OF ENTRY: (Yes)-DERMAL (Yes)-INHALATION (Yes)-INGESTION BREATHING: Excessive breathing of vapors can cause masal and respiratory irritation, dizziness, weakness, fatigue, nausea, headache, possible unconsciousness, and even asphyxiation. SWALLOWING: Can cause gastrointestinal irritation, nausea, vomiting, and diarrhea. Aspiration of material into lungs can cause chemical pneumonitis which can be fatal.

EMERGENCY & FIRST AID PROCEDURES: SKIN- Wash exposed area with soap & water EYES-Flush with large amounts of water. INGESTION- Do not induce vomiting-get medical attention! INHALATION-If affected, remove to fresh air. If breathing is difficult, administer oxygen. If breathing has stopped, give artificial respiration. Get medical attention.

MEDICAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE: None known.

#### SECTION VI -- REACTIVITY DATA

STABILITY: ( )-UNSTABLE (Yes)-STABLE
HAZARDOUS FOLYMERIZATION ( )-MAY OCCUR (XXX)- WILL NOT OCCUR
HAZARDOUS DECOMPOSITION PRODUCTS- Normal combustion forms carbon dioxide & water vapor; incomplete combustion can produce carbon monoxide.
CONDITIONS TO AVOID-Excessive temperatures.

INCOMPATIBILITY (MATERIALS TO AVOID) - Strong oxidizing agents (Nitric Acid. Permanganates, MEK Peroxide, Etc.)

SECTION VII SPILL OR LEAK PROCEDURES

DATE OF PREPARATION— 5/23/86 STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Eliminate attignition sources (flares, flames including pilot lights & electrical sparks). Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop spill at source, dike area of spill to prevent spreading, pump liquid to salvage tank. Remaining liquid may be taken up on sand, clay, earth, floor absorbent, or other absorbent material and shoveled into containers. Prevent run-off to sewers. streams, or other bodies of water.

WASTE DISPOSAL METHOD— Destroy by liquid incineration. Material collected on absorbent material may be deposited in an approved toxic substance landfill in accordance with local, state, and federal regulations.

#### SECTION VIII-- SAFE HANDLING AND USE INFORMATION

RESPIRATORY PROTECTION: If TLV of the product or any component is exceeded. a NIOSH/MESA jointly approved self-contained breathing apparatus with a full face piece operated in pressure demand or other positive pressure mode is advised; however, OSHA regulations also permit other NIOSH/MESA respirators under specified conditions. (See your safety equipment supplier). VENTILATION: Provide sufficient mechanical and/or local exhaust to maintain exposure below TLV(s).

EYE FROTECTION: Chemical splash goggles in compliance with OSHA regulations are advised.

PROTECTIVE GLOVES: Wear resistant gloves such as:, BUNA-N.

Of 'ER PROTECTIVE EQUIPMENT: To prevent repeated or prolonged skin contact. www impervious clothing and boots.

HYGENIC FRACTICES: Wash hands before eating or using washroom.

#### SECTION IX- SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in a cool, dry area. Keep away from heat, sparks, and open flame. Keep containers closed when not in use. Use only with adequate ventilation.

OTHER PRECAUTIONS: Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in this data sheet must be observed.

READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL!

UFACTURER'S CODE: 1998 DATE OF PREPARATION- 5/23/86
INCOMPATIBILITY (MATERIALS TO AVOID)—Strong oxidizing agents (Nitric Acid.
Permanganates, MEK Preoxide, Etc.)

#### SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Eliminate all ignition sources (flares, flames, including pilot lights & electrical sparks.) Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop spill at source, dike area of spill to prevent spreading, pump liquid to salvage tank. Remaining liquid may be taken up on sand, clay earth, floor absorbent or other absorbent material and shoveled into conatiners. Prevent run-off to sewers. streams, or other bodies of water.

WASTE DISFOSAL METHOD: Destroy by liquid incineration. Material collected on absorbent material may be deposited in an approved toxic substance landfill in accordance with local, state, and federal regulations.

#### SECTION VIII-- SAFE HANDLING AND USE INFORMATION

RESPIRATORY PROTECTION: If TLV of the product or any component is exceeded a NIOSH/MESA jointly approved self-contained breathing apparatus with a full face piece operated in pressure demand or other positive pressure mode is advised; however, OSHA regulations also permit other NIOSH/MESA respirators under specified conditions. (See your safety equipment supplier.)

\*\*TNTILATION: Provide sufficient mechanical and/or local exhaust to maintain temposure below TLV(S).

EYE PROTECTION: Chemical splash goggles in compliance with OSHA regulations are advised.

PROTECTIVE GLOVES: Wear resistant gloves such as; BUNA-N.

OTHER PROTECTIVE EQUIPMENT: To prevent repeated or prolonged skin contact. wear impervious clothing and boots.

HYGENIC PRACTICES: Wash hands before eating, smoking or using washroom.

#### SECTION IX-- SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in a cool, dry area. Keep away from heat, sparks, and open flame. Keep containers closed when not in use. Use only with adequate ventilation.

OTHER PRECAUTIONS: Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in this data sheet must be observed.

READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL!!!
GAM 11/5/85



## ( iDEAL Stencil Machine & Tape Company

102 lowa Ave. • Box 305 • Belleville, IL 62222-0305 • Phone (618) 233-0162 • TWX 910-756-2088

1996T14

Date of Prep: 5/30/86

SECTION I

Product Class:

Manufacturers Identification:

Aerosol Spray Stencil Ink

Covers Over Aerosol Spray

	SECTION II	- HAZARDOUS I	NGREDIE	NTS
Ingredient	Percent By Wgt.	TLV PPM	LEL	Vapor Pressure
Toluene	30	100	1.2	
Acetone	25	1000	2.6	
Methylene Chloride	33	500	-	
Aerosol 70 Porpellent	27	No Health Hazard List	1.8 ed	70 psi

#### SECTION III - PHYSICAL DATA

Boiling Range:

Vapor Density: (X) Heavier

( ) Lighter than air

Evaporation Rate: (X)Faster

( )Slower than Ether

82%

Percent Volatile by Volume:

Weight per Gallon:

#### SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Less than 00F Flammability Classification: ORM D Flash Point: LEL: 1.3% Consumer Commodity Self-Pressurized Container of Flammable Liquid

Extinguishing Media: NFPA Class B Extinguisher (CO, Dry Chem., Foam)

Unusual Fire and Explosion Hazards: Water spray may be ineffective in fighting fire, water may spread burning liquid. Water may be used to cool containers preventing pressure buildup.

Special Fire Fighting Procedures: Cans will rupture from internal pressure at about 190°F discharging flammable contents. Combustion of ingredients will produce Hydrochloric acid fumes. Fire fighters should be protected.

#### SECTION IX - SPECIAL PRECAUTIONS

Precautions to be taken in handling and storing: Do not store above 120°F cans may burst discharging flammable liquid and hydrocarbon gas. Do not puncture or incinerate cans.

Other Precautions: Storage of large quantities in building designed and protected for storage of NFPA Class lA Flammable Liquids

Information presented herein has been compiled from sources considered to be dependable and is accurate and reliable to the best of our knowledge and belief but is not guaranteed to be so. Since conditions of use are beyond our control, we make no warranties, expressed or implied, except those that may be contained in our written contract of sale or acknowledgement.

## U.S. DEPARTMENT OF LABOR

Occupational Safety and Health Administration

Form Approved OMH No. 44 R1387 99-022-001

**0**5/86

ASH GROX

Required under USDL Safety and Health Regulations for Ship Repairing,

Shiphiniding	and S	Miphreakin	ig (29 CFR 1915, 1916, 1917)		
		SECT	ION 1		
MANUFACTURER'S NAME The RectorSeal Corporation		• • •	EMERGENCY TELEPHOT	NE NO.	
ADDRESS (Number, Street, City, State, and ZIP Co. 2830 Produce Row: Houston, TX CHEMICAL NAME AND SYNONYMS		023-582	2		
RectorSeal® No 5® CHEMICAL FAMILY Pipe thread sealant			No. 50)	•	
Pipe thread sealant			Propriétary		
SECTION	111 -	HAZAF	DOUS INGREDIENTS	<del></del>	<del></del>
HAZARDOUS INGREDIENTS	×	TLV (Units)	CAS NO.	×	TLV (Units)
Solvents	20	100 <i>pp</i> m	"Chemical Identity is Trade		
·			Secret Information"		
	<del> </del>	-		+-	
	-			+-	
HAZARDŐŮS MIXTURES	SOF	OTHER LIC	UIDS, SOLIDS, OR GASES	×	TLV (Units)
OT MIX WITH GASEOUS OXYGEN					
				<del> </del>	
				<del> </del>	
					<u> </u>
SEC	TIO	VIII - P	HYSICAL DATA	·	
BOILING POINT (F.)	37	720F	SPECIFIC GRAVITY (M20=1)	1.	3486
VAPOR PRESSURE (mm Hs.) @ 680F	0.0	)3 mm <i>Hg</i>	PERCENT, VOLATILE BY VOLUME (%)	2	0
VAPOR DENSITY (AIR+1)	1.	1	EVAPORATION RATE	Ni	1
SOLUBILITY IN WATER	Ins	oluble	***		
APPEARANCE AND ODOR Yellow, mil	d oc	or			
		E AND E	XPLOSION HAZARD DATA		
FLASH POINT (Melnod used) 1850F Tag 0	C		FLAMMABLE LIMITS Lei	-	U+1 1/ d
EXTINGUISHING MEDIA H20, FOam,	CO <sub>2</sub> ,	Dry Ct		_ <del></del> ;,	
SPECIAL FIRE FIGHTING PROCEDURES					
		_			
UAL FIRE AND EXPLOSION HAZAROS	None	·		-	
<u> </u>					

Form OSHA-20

RectorSeal®	″No. 5₩
-------------	---------

זיינ א		SECTION V	/ · HEA	LTH HAZARD DATA
SCD CIMI	100	ppni	· ·	
xcessive in	exposure nalation of	fumes may	cause	dizziness; ingestion has no immediate
oticeable s				
MERGENCY AND	riast Alopaoc nalation -	enuaes provi <u>de</u> fre	sh air:	ingestion - drink plenty of liquids and
				- flush with water for minimum of
5 minutes an	nd contact p	hysician.		
· · · · · · · · · · · · · · · · · · ·	<u></u>			
	•			EACTIVITY DATA
ITABILITY	UNSTABLE		CONDITION	None
	STABLE	X		
NCOMPATABILITY	ABS_r	ripe and ga	seous c	xygen
HAZARDOUS DECO	MPOSITION PRO	DUCTS		
HAZARDOUS	MAY OC			CONDITIONS TO AVOID NOne
	WILL NO	T OCCUR	X	
				•
				2015442000504050
5 2 2 2 2 2 2	SE N IN CASE MATI	_		OR LEAK PROCEDURES
,	N IN CASE MAIL	RIAL IS HELEA		Wipe up spills immediately to
revent footi	ng hazard.			
WASTE DISPUSAL N	Har	dle empty	or dama	ged cans as paint cans. Handle rags
used to wipe	spills as o	ily rags.		
·				
_ <del></del>	CECTIO	A		DOTTOTION INCORMATION
RESPIRATORY PRO			CIALP	ROTECTION INFORMATION
		None		SPECIAL
VENTILATION	LOCAL EXHAU	X		None
	MECHANICAL /	•		OTHER NONE
PROTECTIVE GLOV	<sup>€</sup> Desirable	<ul> <li>not mand</li> </ul>	atory	Desirable - not mandatory
OTHER PROTECTIV	E EQUIPMENT NO	t required		
		CECTION	/ cnr/	CIAL BRECAUTIONS
PRECAUTIONS TO E	E TAKEN IN HA			CIAL PRECAUTIONS
				Handle and store as paint cans
C PRECAUTIO	NS			
	Not requ	ired		

Form OSHA-20 Rev. May 72



#### North American Refractories Co.

900 Hanna Building 1422 Euclid Avenue Cleveland, Ohio 44115 216/621-5200

#### NORTH AMERICAN REFRACTORIES PRODUCT SAFETY DATA SHEET

MANUFACTURER

MSDS # 5040-00

NORTH AMERICAN REFRACTORIES

Vendor:

**Emergency Phone Number** (814) 236-3890 East (415) 432-4741 Vest

Date Issued: 06/06/86 Date Revised: 01/29/86

Product Type: Refractory Plastic Or Ram Material

Trade Name: SUPER PYRAMID AS

SECTION I - PRODUCT IDENTIFICATION

Chemical Name: High Alumina Plastic, Air-Setting

Chemical Family: A1203.5102,A12(504)3.

SECTION II - CHEMICAL COMPOSITION

Hazardous Ingredients: CAS Number:

Crystalline Silica N/A 30% less than

Other Ingredients: CAS Number: PCT:

Alumina Silicate 66402-68-4 less than 80X Hydrous Alumina Silicate 1332-58-7 less than 25X Aluminum Sulfate 10043-01-3 less than 5X

SECTION III - PHYSICAL DATA

Appearance and Odor: Wet; tan, granular mixture, odorless

SECTION IV - FIRE AND EXPLOSION HAZARD

Flammability: This product is non-flammable and will not support combustion.

Threshold Limit Value: For respirable dust: 10 divided by (XQtz. + 2)

SECTION V - HEALTH HAZARD

expressed as mg/m3.

Effects of Overexposure: Chronic exposure to dust could contribute to

PCT:



### North American Refractories Co.

900 Hanna Building 1422 Euclid Avenue Cleveland, Ohio 44115 216/621-5200

silicosis.

Aluminum sulphate may irritate skin and eyes.

Emergency and First Aid Data:

Skin: Wash thoroughly with soap and water. Eyes: Flush with water for 15 minutes and get

medical help.

\*\*\*\*\*\*\*\*\*\*\*\* SECTI

SECTION VI - REACTIVITY DATA

\*\*\*\*\*\*\*\*\*\*

Stability and Reactivity: This product is stable and non-reactive. Hazardous Decomposition: May generate 802 fumes.

\*\*\*\*\*\*

SECTION VII - SPILL AND LEAK PROCEDURES

\*\*\*\*\*\*\*\*

Steps to be Taken in Case of a Spill:

Avoid generating dust exposure during cleanup.

Waste Disposal Method: Dispose of material according to local, state or federal regulations and as final used condition of the product dictates.

\*\*\*\*\*

SECTION VIII - INDUSTRIAL HYGIENE INFORMATION \*\*\*\*

Ventilation: Local exhaust recommended to maintain exposures

below TLV.

Respiratory Protection: Approved dust type for exposures above TLV.

Protective Gloves: Impervious gloves recommended.

Eye Protection: Recommended.

\*\*\*\*\*\*

SECTION IX - SPECIAL PRECAUTIONS

\*\*\*\*\*\*\*\*

Special Precautions: Avoid dust generation.

Precautionary Labeling: Product contains crystalline silica and

aluminum sulfate as a binder.

WARNING: Prolonged inhalation of product

dust may cause delayed lung injury (silicosis). Contact may cause irritation to eyes and skin.



### FLO-KEM INC.

19402 Susana Rd. · Rancho Domínguez, Calif. 90221

HAZARD RATIN	G FIRE
4 = EXTREME	-\(\alpha_{\chi_0}\)
3 = HIGH	7 O REACTIVITY
2 = MODERATE	TOXICITY (1 X 0)
1 = SLIGHT	<del></del>
0 = INSIGNIFICANT	SPECIAL
* = SEE SECTION IV	V—

### **Material Safety Data Sheet**

(Pg. 1 of 4)

IDENTITY SPRAY & WIPE DEGRE	EASER	MSDS NUMBER Furbis	h Blue Zip	203			
Section   Furbish Chemica	l & Supply C						
Manufacturer's Name FLO-KEM IN	1C.	Emergency Telephone Number 213-632-7124					
Address 19402 Susana Rd.		Telephone Number for Inform	nation 213-632-7	7124			
RANCHO DOMINGUEZ,	CA 90221	Date Prepared 06/13/8	6 Revision o				
		Signature of Preparer (option	nal)				
Section II — Hazardous Ingredient	ts/Identity Inform	nation					
Hazardous Components (Specific Chemical Identity: Common Name	e(s)) Cas No. O	SHA PEL ACGIH TLV	Other Limits Recommended	% (optional)			
S-Ethylene Glycol N-Butyl E	ther #111762	50ppm twa 25 pp	m	less than			
•	Characteristics						
•		Specific Gravity (H,O = 1)					
Boiling Point	212	Specific Gravity (H <sub>2</sub> O = 1)  Melting Point		1.054			
Boiling Point Vapor Pressure (mm Hg.)	212 NA			NA NA			
Boiling Point  Vapor Pressure (mm Hg.)  Vapor Density (AIR = 1)	212	Melting Point  Evaporation Rate					
Boiling Point  Vapor Pressure (mm Hg.)  Vapor Density (AIR = 1)  Solubility in Water  Complete	212 NA	Melting Point  Evaporation Rate (Butyl Acetate = 1)		NA NA			
Boiling Point  Vapor Pressure (mm Hg.)  Vapor Density (AIR = 1)  Solubility in Water  Complete  Appearance and Odor	212 NA NA	Melting Point  Evaporation Rate (Butyl Acetate = 1) pH @ 77°F		NA approx 1			
Boiling Point  Vapor Pressure (mm Hg.)  Vapor Density (AIR = 1)  Solubility in Water  Complete	212 NA NA Odor: b	Melting Point  Evaporation Rate (Butyl Acetate = 1)		NA approx 1			
Boiling Point  Vapor Pressure (mm Hg.)  Vapor Density (AIR = 1)  Solubility in Water  Complete  Appearance and Odor  Clear blue liquid.  Section IV — Fire and Explosion I	212 NA NA Odor: b	Melting Point  Evaporation Rate (Butyl Acetate = 1) pH @ 77°F	LEL	NA approx 1			
Boiling Point  Vapor Pressure (mm Hg.)  Vapor Density (AIR = 1)  Solubility in Water  Complete  Appearance and Odor  Clear blue liquid.  Section IV — Fire and Explosion I	212 NA NA Odor: b	Melting Point  Evaporation Rate (Butyl Acetate = 1) pH @ 77°F	LEL NA	NA approx 1 13.0			
Vapor Pressure (mm Hg.)  Vapor Density (AIR = 1)  Solubility in Water  Complete Appearance and Odor  Clear blue liquid.  Section IV — Fire and Explosion I  Flash Point (Method Used)  None to boiling TCC  Extinguishing Media	212 NA NA Odor: b	Melting Point  Evaporation Rate (Butyl Acetate = 1) pH @ 77°F  utyl  Flammable Limits NA	1	NA approx 1 13.0			
Vapor Pressure (mm Hg.)  Vapor Density (AIR = 1)  Solubility in Water  Complete  Appearance and Odor  Clear blue liquid.  Section IV — Fire and Explosion II  Flash Point (Method Used)  None to boiling TCC	212 NA NA Odor: b	Melting Point  Evaporation Rate (Butyl Acetate = 1) pH @ 77°F  utyl  Flammable Limits NA	1	NA approx 1 13.0			
Appearance and Odor  Clear blue liquid.  Section IV — Fire and Explosion I  Flash Point (Method Used)  None to boiling TCC  Extinguishing Media	212 NA NA Odor: b	Melting Point  Evaporation Rate (Butyl Acetate = 1) pH @ 77°F  utyl  Flammable Limits NA	1	NA approx 1 13.0			

Unusual Fire and E	xplosion Hazard	s			
None				•	
	444 44				
Section V — He	alth Hazard D	ata			
Route(s) of Entry:		Eyes	?x	Skin?X	Ingestion?x
Acute) Health Haza					
		es will caus			
Skin: Conta Ingestion:		in may cause			
Tilges LTOIT:	accompanie	d by nausea .	eritation and womiti	ng the thr	oat, mouth, and digestive tract
Inhalation:					ntilated areas may cause irritat
		cous membran			
(Chronic) Health Ha	rarde				
None curren		<del></del>			
				<del></del>	
0:					
Signs and Sympton	ns of Exposure				
Medical Conditions	Generally Aggr	avated by Exposur	e		
None curren	tly known.				
Emergency and Fir			*		
		large amoun	ts of wate	r. If irr	<u>itation occurs or persists, obta</u>
medical ass		T.C. !			
<u>Skin: Wash</u> Ingestion:					ain medical attention. vomiting. Have medical personne
		n of stomach			voluting. have meatial personne
					vulsing person.
					medical attention if respirator
Section VI — 1	oxicity Data				
Carcinogenicity:	No N	TP?	IARC Monog	raphs?	OSHA Regulated?
-					
Oral:					
				<u></u>	
<del>-</del>					

TITY	SPRAY & W	IPE I	DEGREASER	MSDS NUMBER	203
ıt:					
					•
			<u> </u>		
ion:					
					· .
ion VI	I — Reactivity	Data			
bility	Unstable	1	Conditions to Avoid		
oiiit <b>y</b>	Stable	X	Conditions to Avoic		
atibilit	y (Materials to Av				
ong a	acids, oxidi	zing	materials.		
			<del></del>		
				·	
doug D	ecomposition or f		urte		
dous D	ecomposition of t	syprou	ucis		
	<del></del>				
'18	May Occur		Conditions to Avoid	<u>d</u>	
_∠atio	Mill Not Occur	X			
ion VI	II Precautic	ne fo	r Safe Handling	and lice	
				·	
to Be T	aken in Case Mat	erial Is	Released or Spilled	d	
				l - flush with water. Large sp	
				absorbant material and place in	
				Flush spill area with water to icials as required.	remove any residue.
.119 .	locar, state	, 411	a lederal oil	iciais as requireu.	
··· <u>-</u>					
	sal Method			<del></del>	
				ically reprocessed should be di	
				icable regulations under the Re	
over	y Act. Note	. 5	<u>гаге апи тоса</u>	l regulations may be more strin	gent than regeral.
		·			
utions	to Be Taken in Ha	ndling	and Storing		
			_	ool dry place. Keep container	closed when not in

Other Precautions			
Keep out of reac	ch of children	· · · · · · · · · · · · · · · · · · ·	
	and institutional use only.		
TOT THOUSETTAL 8	and institutional use only.	·	
<del></del>		Wile to the second of the seco	
		· · · · · · · · · · · · · · · · · ·	
			· · · · · · · · · · · · · · · · · · ·
<del></del>			
Section IX — Contro	ol Measures		
Respiratory Protection (S			
· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	,	
<u>Good room venti.</u> Ventilation	lation required.  Local Exhaust		Special
	Local Exhaust		Special
NA	NA		NA
	NA		Other
	Mechanical (General)		Officer
	In confined areas	ļ	I
5			
Protective Gloves Rubb	<u>er or plastic</u>	Eye Protection Full	face shield.
Other Protective Clothing	or Equipment		
_Eye wash.		<del></del>	
Work/Hygienic Practices			re a mechanical exhaust venti
	ing emissions at the point		
			general guidance for minimizi
<u>posure when handl</u>	ing this product. Because	<u>use conditions w</u>	ill vary depending upon custo
		<u>res should be dev</u>	eloped by a person knowledger
the intended use	conditions and equipment.		· · · · · · · · · · · · · · · · · · ·
Section X—DOT Haz	zardous Information ————	<del></del>	
UN/NA			
Classification			
Proper Shipping Name			
Photo Chemically Reactiv	e? Non-Photo Chemically Reactive?	(4% )4%	
		•	<del>-</del>
Section XI · Miscella			
Section XI - Miscella	aneous information		
None			
			·
	<del></del>		

#### NOTICE

All information, recommendations, and suggestions appearing herein concerning this product are based upon data obtained from the manufacturer and/or recognized technical sources; however, FLO-KEM, INC. makes no warranty, representation or guaranty as to the accuracy, sufficiency or completeness of the material set forth herein. It is the user's responsibility to determine the safety, toxicity and suitability of his own use, handling and disposal of the product. Additional product literature may be available upon request. Since actual use by others is beyond our control, no warranty, express or implied, is made by FLO-KEM, INC. as to the effects of such use, the results to be obtained or the safety and toxicity of the product, nor does FLO-KEM, INC. assume any liability arising out of use by others of the product.

NA-NOT APPLICABLE

S-MAY BE ABSORBED THROUGH INTACT SKIN

ND-NO DATA AVAILABLE

C



AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 1 OF 3

ZEP MANUFACTURING COMPANY `ST IN MAINTENANCE PRODUCTS DATE

: 06/25/86

ZEP CLEAN N SHINE

SUPERSEDES: 04/27/86 PRODUCT NUMBER: 1954

SECTION I - E M E R G E N C Y C O N T A C T S

P.O. BOX 2015

ZEP MANUFACTURING COMPANY NON-OFFICE HOURS, WEEKENDS, AND HOLIDAYS:AREA CODE 404 435-2973, 996-0899, 252-1587, 351-2952, 445-9226

ATLANTA, GEORGIA 30301 TELEPHONE (404)352-1680 TRANSPORTATION EMERGENCY BETWEEN 8:00A.M.-5:00P.M. CHEMTREC: TOLL FREE 1-800-424-9300 ALL CALLS RECORDED

(EASTERN TIME ZONE) DISTRICT OF COLUMBIA (202)483-7616 ALL CALLS RECORDED

SECTION II - HAZARDOUS INGREDIENTS

DESIGNATIONS

TLV EFFECTS (PPM) (SEE REVERSE) PROD.

Z IN

THIS PRODUCT CONTAINS NO INGREDIENTS WHICH ARE INHERENTLY HAZARDOUS AS DEFINED IN OSHA'S HAZARD COMMUNICATION STANDARD(29 CFR 1910.1200).

SPECIAL NOTE: ADVERSE HEALTH EFFECTS WOULD NOT BE EXPECTED UNDER RECOMMENDED CONDITIONS OF USE SO LONG AS PRESCRIBED SAFETY PRECAUTIONS ARE PRACTICED.

SECTION III - HEALTH HAZARD DATA

ACUTE EFFECTS OF OVEREXPOSURE:

THERE ARE NO KNOWN EFFECTS FROM ACUTE OVEREXPOSURE TO THIS PRODUCT. HOWEVER, IN LIGHT OF GOOD INDUSTRIAL HYGIENE, EXPOSURE TO ANY CHEMICAL SHOULD BE KEPT TO A M. MUM.

#### NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain our to date

By way of explanation, we have identified in section if of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

#### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen-Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the

International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible-At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive-Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL: Flammable-At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic The probable lethal dose for a 70 kg (150 lb.) man is one teaspoon or more. HTX; Highly Toxic-The probable lethal uose for a 70 kg (100 log) man is smoothed. ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation-A primary route of exposure through breathing of vapors (see below).

IRR: Irritant-Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposuré Limit-The time-weighted-average exposure value estimated by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value-A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic-The probable tethal dose for a 70 kg men is one conce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This timeweighted-average is arrived at by using a formula developed by the ACG/H for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve, only as a guide for providing workplace conditions. under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consuit a physician prior to the use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Fraints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary route of Entrythis item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat. flame, sparks or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations, "Empty" containers should never be reused unless reconditioned...

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent.... with label instructions and the Material Safety Data Sheet, Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

#### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from a failure to follow instructions, warnings and advisories in the product's label and Material Salety Data Sheet.



AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 2 OF 3

ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS DATE

: 06/25/86 ZEP CLEAN N SHINE

SUPERSEDES: 04/27/86 PRODUCT NUMBER: 1954

ECTION III - H E A L T H H A Z A R D D A T A (CONTINUED)

HRONIC EFFECTS OF OVEREXPOSURE:

HERE ARE NO KNOWN EFFECTS FROM CHRONIC EXPOSURE TO THIS PRODUCT.

IONE OF THE HAZARDOUS INGREDIENTS ARE LISTED AS CARCINOGENS BY IARC, NTP, & OSHA

STID PELITEV: NOT ESTABLISHED PRIMARY ROUTES OF ENTRY: N/A

IMIS CODES: HEALTH OFFLAM. OFFEACT. OFFERS. PROTECT, N/AFCHRONIC HAZ. NO

IRST AID PROCEDURES:

KIN : FLUSH CONTAMINATED SKIN WITH PLENTY OF WATER. CONSULT A PHYSICIAN

IF IRRITATION DEVELOPS.

IYES : IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, OC-

CASIONALLY LIFTING UPPER AND LOWER LIDS. GET MEDICAL ATTENTION AT ONCE.

NHALE: MOVE EXPOSED PERSON TO FRESH AIR. IF IRRITATION PERSISTS,

GET MEDICAL ATTENTION PROMPTLY.

NGEST: IF THIS PRODUCT IS SWALLOWED, DO NOT INDUCE VOMITING. IF VICTIM IS

CONSCIOUS GIVE PLENTY OF WATER TO DRINK, GET MEDICAL ATTENTION AT ONCE.

ECTION IV - SPECIAL PROTECTION INFORMATION

PROTECTIVE CLOTHING : THE USE OF NEOFRENE, NITRILE OR NATURAL RUBBER GLOVES IS

STRONGLY RECOMMENDED, ESPECIALLY FOR PROLONGED CONTACT.

YE PROTECTION : USE OF TIGHT-FITTING SAFETY GLASSES OR GOGGLES IS STRON-

GLY RECOMMENDED, ESPECIALLY WHEN WEARING CONTACT LENSES.

RESPIRATORY PROTECTION: NO SPECIAL MEASURES ARE REQUIRED.

: NO SPECIAL MEASURES ARE REQUIRED. /ENTILATION

SECTION V - PHYSICAL DATA

BOILING POINT (F) : 212F APPROX. SPECIFIC GRAVITY : 1.03

PERCENT VOLATILE BY VOLUME (%) : 80% /APOR PRESSURE(MMHG): N/A
/APOR DENSITY(AIR=1): N/A

=1): 1.0

/APOR DENSITY(AIR=1): N/A EVAPORATION RATE(WATER SOLUBILITY IN WATER : COMPLETE PH(CONCENTRATE)
PH(USE DILUTION OF : 8.6

): N/A

APPEARANCE AND ODOR :THIN, TRANSLUCENT, MILKY-WHITE LIQUID WITH MILD ODOR

SECTION VI - FIRE AND EXPLOSION DATA

(TCC )

FLUSH POINT(F) (METHOD USED): NONE FLAMMABLE LIMITS LEL N/A DEL N/A

EXTINGUISHING MEDIA : NON-COMBUSTIBLE LIQUID

SPECIAL FIRE FIGHTING: NONE UNUSUAL FIRE HAZARDS : NONE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up to date



By way of explanation, we have identified to section If of this ic in those components which contribute some hazard to our product. The hazard designations correspond to those required upday OSHAy Hazard Communication Standard (29 CFR 1910.1200) and in may be interpreted as follows: 

# ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen-Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible-At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.
CNS: Central Nervous System Depressant.
COR: Corrosive-Causes irreversible afterations in living tissue (e.g. burns).
EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

FBL: Flammable-At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 lb.) man is one teaspoon or more. ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation-A primary route of exposure through breathing of vapors (see below).

INRI: Innalation-A primary route of exposure through breating of vapors (see below).

IRR: Irritant-Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable-Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit-The time-weighted-average exposure value estimated by OSHA for repeated exposure during any 8-bours per day. 5 days for week without adverse effects. any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergio reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value-A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic-The probable lethal close for a 70 kg man is one curice or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This timeweighted-average is arrived at by using a formula developed by the ACGIH for only those products where the bazardous ingredients have similar toxicological properties. The estimated value should serve, only as a guide for providing workplace conditions. under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to the use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary route of Entrythis item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic. or specific-organ toxic effect. ories de libros in Savetralian e

As a further word of caution, Zop wishes to advise that serious additions have resulted from the misuse of remptied" containers. "Empty" containers retain residue fliquid and/or vapon and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat, flame, sperks or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficuit to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Egipty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and... the Material Safety Data Sheet Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

#### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which: we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate, all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from a failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.



AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 3 OF 3

ZEP MANUFACTURING COMPANY `ST IN MAINTENANCE PRODUCTS DATE

: 06/25/86 ZEP CLEAN N SHINE

SUPERSEDES: 04/27/86 PRODUCT NUMBER: 1954

ECTION VII - REACTIVITY DATA

TABILITY

: STABLE

NCOMPATIBILITY (AVOID) : STRONG OXIDIZING AGENTS

OLYMERIZATION : WILL NOT OCCUR

AZARDOUS DECOMPOSITION: CARBON DIOXIDE, CARBON MONOXIDE, & OXIDES OF NITROGEN

ECTION VIII - SPILL AND DISPOSAL PROCEDURES

TEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: BSERVE SAFETY PROCEDURES IN SECTION 4 & 9 DURING CLEAN-UP. ABSORB SPILL ON NERT ABSORBENT MATERIAL (es ZEP-O-ZORB). PICK UP AND PLACE RESIDUE IN A UITABLE WASTE CONTAINER OR, IF PERMITTED, FLUSH TO SEWER. THOROUGHLY RINSE FILL AREA WITH WATER.

ASTE DISPOSAL METHOD:

IGUID WASTES ARE NOT PERMITTED IN LANDFILLS. THIS PRODUCT IS NOT CONSIDERED A AZARDOUS WASTE UNDER RORA, UNUSABLE LIQUID MAY BE ABSORBED ON AN INERT ABSORB-INT (es ZEP-O-ZORB), DRUMMED, AND TAKEN TO A CHEMICAL OR INDUSTRIAL LANDFILL. IN OME AREAS DISPOSAL BY FLUSHING INTO A SANITARY SEWER WITH PLENTY OF WATER MAY E PERMISSIBLE. CONSULT LOCAL, STATE, AND FEDERAL AGENCIES FOR PROPER DISPOSAL ETHOD IN YOUR AREA.

CRA HAZ. WASTE NOS.: N/A

JECTION IX - SPECIAL PRECAUTIONS

RECAUTIONS TO BE TAKEN WHEN HANDLING AND STORING:

:TORE TIGHTLY CLOSED CONTAINER IN A DRY AREA AT TEMPERATURES BETWEEN 40 - 120 F. JEGREES.

Tall little litt

EEP PRODUCT AWAY FROM SKIN AND EYES.

EEP OUT OF THE REACH OF CHILDREN.

SECTION X - TRANSPORTATION DATA

DOT PROPER SHIPPING NAME

NONE

OOT HAZARD CLASS: N/A

or I.D. NUMBER : N/A

DOT LABEL/PLACARD: NONE

SHA TSCA CHEMICAL INVENTORY - ALL INGREDIENTS ARE LISTED

EPA CWA 40CFR PART 117 SUBSTANCE(RQ IN A SINGLE CONTAINER): N/A

### NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.

By way of explanation, we have identified in section if or this form those components which contribute some hazard to our product. The hazard designations conserve a to those required and a CSTA's Instant Communication Standard (29 CFR 1910.1200) and may be interpreted as follows,

### \_ ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen-Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Concer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition

CNS: Central Nervous System Depressant.

COR: Corrosive-Causes irreversible alterations in living (issue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

FBL: Flammable-At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic The probable lethal dose for a 70 kg (150 lb.) man is one teaspoon or more.

ING: Ingestion-A primary route of exposure through swallowing of flouid or solid (see below).

INH: Inhalation-A primary route of exposure through breathing of vapors (see below).

IRR: Irritant-Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable-Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for this item. 

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.
PEL: Permissible Exposure Limit-The time-weighted-average exposure value estimated by OSHA for repeated exposure during any 8 hours per day, 5 days per week; without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value-A time-weighted average exposure value established by the ACGIH for the-work period described

under PEL, above.
TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more. under PEL, above.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This timeweighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions: under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant: anyone with such a condition should consult a physician prior to the use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those, customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary route of Entrythis item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

As a further word of caution, Zap wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (figuid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat, fiame, sparks or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and inaccordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

## DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from a failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.



## North American Refractories Co.

WESTERN DIVISION



BRAND: LITECRETE® 50

ASTM CLASS: N & O

APPLICATION: CAST MIX

DESCRIPTION: General purpose low iron insulating castable

conforming to ASTM specifications.

SERVICE DATA: (ASTM C113, C133, C20)

		(After firing to	Thermal		
Temperature,	۰F	Permanent Linear Change,%	Modulus of Rupture,psi	Cold Crushing,psi	Conductivity BTU/in./hr.ft²°F
220		. 0	80-150	350-450	
500			80-110	200-300	1.7
1000		-0.3	80-100	225-325	1.6
1500	ıί	-0.9	90-125	325-375	1.5
2000		-1.2	90-130	350-400	

### APPLICATION DATA:

Maximum Service Temperature (MST)	( °F)	2,200
Amount Required for Installation	(pcf.)	50-55
Bulk Density - After Drying at 220°F	(pcf.)	55-60
- After Firing to 1500°F	(pcf.)	50-55
Water required for 100 lbs. dry (Approx.)	(wt.%)	50%

### CHEMICAL DATA:

Alumina (Al <sub>2</sub> O <sub>3</sub> )	41.3	%	Lime (CaO)	11.5	%
Silica (SiO₂)	43.3	%	Magnesia (MgO)	0.2	%
Titania (TiO₂)	1.2	<b>%</b>	Alkalies (Na <sub>2</sub> 0, K <sub>2</sub> 0)	0.8	%
Ferric Oxide (Fe <sub>2</sub> O <sub>3</sub> )	0.6	%	L.O.I.	1.1	

6/86



AND SAFE HANDLING AND DISPOSAL INFORMATION

ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS

DATE

: 07/04/86

PAGE 1 OF 3 - -2.000

SUPERSEDES: 08/84

SECTION I - EMERGENCY CONTACTS

P.O. BOX 2015 ATLANTA, GEORGIA 30301 TELEPHONE (404)352-1680

(EASTERN TIME ZONE)

ZEP MANUFACTURING COMPANY NON-OFFICE HOURS, WEEKENDS, AND HOLIDAYS: AREA CODE 404 435-2973, 996-0899, 252-1587, 351-2952, 971-3367 LOCAL POISON CONTROL CENTER ......

TRANSPORTATION EMERGENCY

BETWEEN 8:00A.M.-5:00P.M. CHEMTREC: TOLL FREE 1-800-424-9300 ALL CALLS RECORDED DISTRICT OF COLUMBIA (202)483-7616 ALL CALLS RECORDED

SECTION II - HAZARDOUS INGREDIENTS

DESIGNATIONS

TLV EFFECTS -% IN (PPM) (SEE REVERSE) PROD.

100

THIS PRODUCT CONTAINS NO INGREDIENTS WHICH ARE INHERENTLY HAZARDOUS AS DEFINED IN OSHA'S HAZARD COMMUNICATION STANDARD(29 CFR 1910.1200).

SPECIAL NOTE: ADVERSE HEALTH EFFECTS WOULD NOT BE EXPECTED UNDER RECOMMENDED CONDITIONS OF USE SO LONG AS PRESCRIBED SAFETY PRECAUTIONS ARE PRACTICED.

DATA SECTION III - H E A L T H HAZARD

ACUTE EFFECTS OF OVEREXPOSURE:

THIS PRODUCT CAN BE AN EYE IRRITANT, INFLAMMATION OF EYE TISSUE IS CHARACTERIZED BY REDNESS, WATERING, AND/OR ITCHING.

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists, https://doi.org/10.100/

CAR: Carcinogen—Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of

H # 1 # 2 A 4 4 \$

ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive-Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated,

FBL: Flammable—At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic-The probable lethal cose for a 70 kg (150 lb.) man is one teaspoonful or more.

IRR: Irritant-Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable—Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit-The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value-A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the ESTD PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This timeweighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry-this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalizedsystemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally sate manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to fead the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.





ZEP MANUFACTURING COMPANY

ST IN MAINTENANCE PRODUCTS

## MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION

DATE

: 07/04/86

PAGE 2 OF 3

SUPERSEDES: 08/84 PRODUCT NUMBER: 13/6

SECTION III - HEALTH HAZARD DATA (CONTINUED)

CHRONIC EFFECTS OF OVEREXPOSURE:

THERE ARE NO KNOWN EFFECTS FROM CHRONIC EXPOSURE TO THIS PRODUCT. NONE OF THE INGREDIENTS ARE LISTED AS CARCINOGENS BY IARC, NTP, OR OSHA.

EST'D PEL/TLV: NOT ESTABLISHED PRIMARY ROUTES OF ENTRY: N/A

HMIS CODES: HEALTH 1; FLAM. 0; REACT. 0; PERS. PROTECT. A ; CHRONIC HAZ. NO

FIRST AID PROCEDURES:

SKIN : FLUSH CONTAMINATED SKIN WITH PLENTY OF WATER. CONSULT A PHYSICIAN IF IRRITATION DEVELOPS.

EYES : IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, OC-

CASIONALLY LIFTING UPPER AND LOWER LIDS. GET MEDICAL ATTENTION AT ONCE.

HALE: MOVE EXPOSED PERSON TO FRESH AIR. IF IRRITATION PERSISTS,

GET MEDICAL ATTENTION PROMPTLY.

INGEST: IF THIS PRODUCT IS SWALLOWED, DO NOT INDUCE VOMITING. IF VICTIM IS

CONSCIOUS GIVE PLENTY OF WATER TO DRINK. GET MEDICAL ATTENTION AT ONCE.

SECTION IV - SPECIAL PROTECTION INFORMATION

PROTECTIVE CLOTHING : THE USE OF NEOPRENE, NITRILE OR NATURAL RUBBER GLOVES IS STRONGLY RECOMMENDED, ESPECIALLY FOR PROLONGED CONTACT.

EYE PROTECTION

\* WEAR TIGHT-FITTING SAFETY GLASSES WHEN USING OR

HANDLING THIS PRODUCT.

RESPIRATORY PROTECTION: NO SPECIAL MEASURES ARE REQUIRED.

VENTILATION

: NO SPECIAL MEASURES ARE REQUIRED.

SECTION V - PHYSICAL DATA

BOILING POINT (F) : APPROX. 215F SPECIFIC GRAVITY

: 1.06

VAPOR PRESSURE(MMHG): N/A

PERCENT VOLATILE BY VOLUME (%)

: 75.1

VAPOR DENSITY(AIR=1): N/A

EVAPORATION RATE(WATER

=1): 1.0

SOLUBILITY IN WATER : COMPLETE

PH(CONCENTRATE)

: 8.0-9.0

PH(USE DILUTION OF 1% SOLUTION ): 7.0-7.5

APPEARANCE AND ODOR :A CLEAR, DARK BLUE LIQUID HAVING NO DISTINCT ODOR.

`ECTIONVI - FIRE AND EXPLOSION DATA

FLASH POINT(F) (METHOD USED): N/A

(N/A)

FLAMMABLE LIMITS LEL N/A UEL N/A

EXTINGUISHING MEDIA : NON-COMBUSTIBLE LIQUID

SPECIAL FIRE FIGHTING: NONE UNUSUAL FIRE HAZARDS : NONE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.



SARRUB CALL UND ECHTE

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen-Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible-At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive—Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Éstimated.

FBL: Flammable-At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation-A primary route of exposure through breathing of vapors (see-below).

IRR: Irritant-Causes reversible effects in living tiesues (e.g. inflammation). সুরুত্ত সুরুত

N/A: Not Applicable-Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration. The Michigan Health and Health Health William Health Administration.

PEL: Permissible Exposure Limit-The time-weighted-average exposure value established by QSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below). TLV: Threshold Limit Value-A time-weighted average exposure value established by the ACGIH for the work period described under PEL, above. an officer of Martine The annual Brid 180.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This timeweighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry-this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalizedsystemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sere to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

DISCLAIMER All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet. el Volta de alto WITHOUT I SECUREDA



There is no the second of the

BAGA AMATEMA PAL ANGLISH BEACH, I CHARLING BOTH DESCRIBING



AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 3 OF 3

ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS

DATE

: 07/04/86

PRODUCT MUMBERS

SECTION VII - REACTIVITY DATA

STABILITY

: STABLE

INCOMPATIBILITY(AVOID) : NONE

POLYMERIZATION

: WILL NOT OCCUR

HAZARDOUS DECOMPOSITION: CARBON DIOXIDE, CARBON MONOXIDE, AND OTHER UNIDENTIFIED

ORGANIC COMPOUNDS.

SECTION VIII - S P I L L DISPOSAL PROCEDURES AND

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: OBSERVE SAFETY PROCEDURES IN SECTION 4 & 9 DURING CLEAN-UP. ABSORB SPILL ON INERT ABSORBENT MATERIAL (EG ZEP-O-ZORB). PICK UP AND PLACE RESIDUE IN A SUITABLE WASTE CONTAINER OR, IF PERMITTED, FLUSH TO SEWER. THOROUGHLY RINSE SPILL AREA WITH WATER.

SUPERSELES: US/84

WASTE DISPOSAL METHOD:

LIQUID WASTES ARE NOT PERMITTED IN LANDFILLS. THIS PRODUCT IS NOT CONSIDERED A HAZARDOUS WASTE UNDER RCRA. UNUSABLE LIQUID MAY BE ABSORBED ON AN INERT ABSORB-ENT (EG ZEP-O-ZORB), DRUMMED, AND TAKEN TO A CHEMICAL OR INDUSTRIAL LANDFILL. IN SOME AREAS DISPOSAL BY FLUSHING INTO A SANITARY SEWER WITH PLENTY OF WATER MAY BE PERMISSIBLE. CONSULT LOCAL, STATE, AND FEDERAL AGENCIES FOR PROPER DISPOSAL METHOD IN YOUR AREA.

RCRA HAZ. WASTE NOS.: N/A

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN WHEN HANDLING AND STORING: STORE TIGHTLY CLOSED CONTAINER IN DRY AREA AT TEMPERATURES BETWEEN 40 AND 120 DEGREES F.

KEEP PRODUCT OUT OF EYES.

CLOTHING OR SHOES WHICH BECOME CONTAMINATED WITH SUBSTANCE SHOULD BE REMOVED PROMPTLY AND NOT REWORN UNTIL THOROUGHLY CLEANED. KEEP OUT OF THE REACH OF CHILDREN.

SECTION X - TRANSPORTATION

DOT PROPER SHIPPING NAME

NONE

OT HAZARD CLASS: N/A

√OT I.D. NUMBER : N/A DOT LABEL/PLACARD: NONE

EPA TSCA CHEMICAL INVENTORY - ALL INGREDIENTS ARE LISTED

EPA CWA 40CFR PART 117 SUBSTANCE(RQ IN A SINGLE CONTAINER): NONE

Appendix33-000331

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.

Authoritate Description Alberta

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen-Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive-Causes irreversible alterations in living tissue (e.g. bürns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissuespecies and appropriate an

Est'd: Éstimated.

FBL: Flammable—At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation—A primary route of exposure through breathing of vapors (see below).

IRR: Irritant-Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable—Category is not appropriate for this product.
N/D: Not Determined—Insufficient information for a determination for this item.
NIOSH: National Institute for Occupational Safety and Health.
OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit-The time-weighted-average exposure value established by QSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value-A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This timeweighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry-this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized. systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" confainers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize/cut, weld/braze, solder, drill/ and a grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death.

Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions; warnings and advisories in the product's label and Material Safety Data Sheet. 

NATIONAL SANITARY SUPPLY CO. 13217 S. Figueroa Street Los Angeles, California 90061 Tel. No. 213/770-1970 Emergency Tel. No. 213/327-6795

MATERIAL SAFETY DATA SHEET

SECTION 1. IDENTIFICATION OF PRODUCT
Product Name: SUPER SHINE AEROSOL Product Code: WPW006/786 Type Of Product: WAX POLISH Prepared By: IAN R. GECKER  Date Issued: 7/15/86 Supercedes:11/85 National Item#: 3221XX
SECTION 2. INGREDIENTS CAS NUMBER EXPOSURE LIMITS IN AIR ACGIH-TLV OSHA-PEL
DEODORIZED KEROSENE 8008206 100 PPM 100 PPM 150BUTANE/PROPANE 75285/74986 800 PPM 800 PPM
SECTION 3. PHYSICAL DATA
Vapor Density (air=1): <1.0 Melting Foint or Range, F: N/A Specific Gravity g/cc a 60 F: N/A Boiling Point or Range, F: N/A Solubility in Water: MODERATE Evaporation Rate (BuAce=1): >1.0 Vapor Pressure, psig a 70 F: 41-51 pH a 25 C: 9.7-10.3 Appearance and Odor: FOAMY SPRAY/LEMON Flash Point F (TCC): N/A Flame Extension a 70 F: NONE
Section 4. FIRE AND EXPLOSION HAZARD DATA
Flash Point, F (TCC): N/A Auto Ignition Temperatue, F: N/A Flammable Limits in Air, Volume %: LOWER (LEL) 1.8 UPPER (UEL) 9.5 Fire Extinguishing Materials: WATER SPRAY, FOAK, CARBON DIOXIDE, DRY CHEMICAL Special Firefighting Procedures: FIREFIGHTERS MUST WEAR FULL BUNKER GEAR (HELMET, FACESHIELD, COATS, BOOTS, GLOVES). WEAR A NIOSH APPROVED.
(HELMET, FACESHIELD, COATS, BOOTS, GLOVES). WEAR A NIOSH APPROVED SELF-CONTAINED BREATHING APPARATUS. CONTAINERS EXPOSED TO HEAT MUST BE WATER COOLED TO PREVENT BURSTING AND ROCKETING AND FURTHER SPEWING OF IGNITED FLAMMABLE CONSTITUENTS.  Unusual Fire And Explosion Hazards: AEROSOL PRESSURIZED CONTAINER WILL BURST AND/OR ROCKET WHEN EXPOSED TO TEMPERATURES ABOVE 120 F.
SECTION S. REACTIVITY DATA
Stability: STABLE Conditions to Avoid: EXPOSURE TO TEMPERATURES IN EXCESS OF 120 F, HEAT SPARK, OPEN FLAME, OR OTHER SOURCES OF IGNITION. Incompatibility (materials to avoid): OXIDIZERS AND ALKALIES. Hazardous Decomposition Products (including combustion products): CARBON DIOXIDE, CARBON MONOXIDE, HYDROGEN CHLORIDE AND CRGANIC VAPORS OF UNKNOWN COMPOSITION. Hazardous Polymerization: WILL NOT OCCUR
SECTION 6. SPILL, LEAK AND DISPOSAL PROCEDURES
Spill Response: TURN OFF ALL SOURCES OF IGNITION. VENTILATE AREA COMPLETELY. DIKE AREA. APPLY AN ABSORBENT AND SWEEP UP. Waste Disposal: PLACE INTO CONTAINERS FOR DISPOSAL NOTE: DISPOSE OF ALL WASTE IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATION.

APR 7 9 1991

### SECTION 7. HEALTH HAZARD DATA

SYMPTOMS OF OVEREXPOSURE Inhaled: NAUSEA, DIZZINESS, HEADACHE, ANAESTHETIC EFFECTS Contact with Skin or Eyes: IRRITANT. Absorbed Through Skin: NOT READILY ABSORBED. Swallowed: NAUSEA, VOMITING

HEALTH EFFECTS OR RISKS FROM EXPOSURE Acute: NASAL AND RESPIRATORY IRRITATION. Chronic: N/A

SECTION 8. EMERGENCY AND FIRST AID PROCEDURES

Eye Contact: FLUSH WITH WATER FOR 15 MINUTES. GET MEDICAL ATTENTION.
Skin Contact: FLUSH WITH WATER. WASH WITH SOAP AND WARM WATER. GET MEDICAL ATTENTION.
Inhaled: REMOVE TO FRESH AIR. IF NOT BREATHING GIVE CPR CR OXYGEN. GET IMMEDIATE MEDICAL ATTENTION.
SWALLOWED: DO NOT INDUCE VOMITIONG. GET IMMEDIATE MEDICAL ATTENTION.
NO: THIS PRODUCT'S INGREDIENTS ARE NOT FOUND IN THE LISTS BELOW.
FEDERAL OSHA. NTP. IARC
CALIFORNIA EMPLOYERS USING CAL/OSHA-REGULATED CARCINOGENS MUST REGISTER WITH CAL/OSHA AND FEDERAL OSHA CARCINOGEN LISTS ARE SIMILAR.
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE
PRE-EXISTING SKIN, EYE AND LUNG DISORDERS MAY BE AGGRAVATED BY EXPOSURE
TO THIS PRODUCT.
Recommendation to Physician: ASPIRATION OF MATERIAL INTO LUNGS CAN CAUSE CHEMCIAL PNEUMONITIS WHICH CAN BE FATAL.

SPECIAL PROTECTION INFORMATION SECTION 9.

Ventitation and Engineering Controls: USE WITH ADEQUATE VENTILATION.
Respiratory Protection: NONE WHEN USED IN ACCORDANCE WITH LABEL
DIRECTIONS.

Eye Protection: NONE WHEN USED IN ACCORDANCE WITH LABEL DIRECTIONS.
Gloves: NONE WHEN USED IN ACCORDANCE WITH LABEL DIRECTIONS.
Other Clothing and Equipment: NONE WHEN USED IN ACCORDANCE WITH LABEL
DIRECTIONS.
Work Practices: Hygenic Practices: WASH WITH SOAP WATER BEFORE EATING.

Work Practices, Hygenic Practices: WASH WITH SOAP WATER BEFORE EATING, SMOKING, DRINKING OR USING TOTLET FACILITIES.

Other Handling and Storage Requirements: HANDLE AND STORE IN ACCORDANCE AND WITH LABEL DIRECTIONS. DO NOT PUNCTURE OR INCINERATE CONTAINER. Protective Measures During Maintenance of Contaminated Equipment: FLUSH OFF WITH WATER AND/OR WIPE OFF WITH RAGS ALL CONTAMINATION PRIOR TO WORKING ON EQUIPMENT.

THE INFORMATION ON THIS MATERIAL SAFETY DATA SHEET REPRESENTS THE LATEST DATA AND BEST OPINION AS TO THE PROPER USE AND HANDLING OF THIS PRODUCT UNDER NORMAL CONDITIONS. ANY USE OF THIS PRODUCT OR METHOD OF APPLICATION WHICH IS NOT IN CONFORMANCE WITH THIS DATA SHEET AND THE PRODUCT LABEL DIRECTIONS, IS THE RESPONSIBILITY OF THE USER. THIS MATERIAL SAFETY DATA SHEET WAS PREPARED TO COMPLY WITH THE OSHA HAZARD COMMUNICATION REGULATION.



### AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 1 OF 3

ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS DATE

: 07/16/86 ZEP IRONCLAD

SUPERSEDES: 05/09/86 PRODUCT NUMBER: 1365

SECTION I - EMERGENCY CONTACTS

ZEP MANUFACTURING COMPANY NON-OFFICE HOURS, WEEKENDS, AND HOLIDAYS: AREA CODE 404 P. D. BOX 2015 435-2973, 996-0899, 252-1587, 351-2952, 971-3367

ATLANTA, GEORGIA 30301 LOCAL POISON CONTROL CENTER .....

TELEPHONE (404)352-1680 TRANSPORTATION EMERGENCY

BETWEEN 8:00A. M. -5:00P. M. CHEMTREC: TOLL FREE 1-800-424-9300 ALL CALLS RECORDED (EASTERN TIME ZONE) DISTRICT OF COLUMBIA (202)483-7616 ALL CALLS RECORDED

SECTION II - HAZARDOUS INGREDIENTS

DESIGNATIONS \*\* LIGHT ALIPHATIC NAPHTHA \*\* solvent naphtha (petroleum), medium aliphatics; formerly: light aromatic naphtha; CAS#64742-88-7; RTECS# NONE; OSHA PEL 500ppm

TLV EFFECTS (PPM) (SEE REVERSE) PROD. IRR CBL 100 50~60

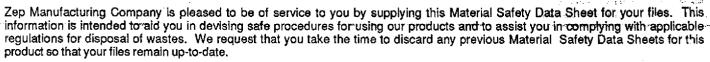
SPECIAL NOTE: ADVERSE HEALTH EFFECTS WOULD NOT BE EXPECTED UNDER RECOMMENDED CONDITIONS OF USE SO LONG AS PRESCRIBED SAFETY PRECAUTIONS ARE PRACTICED.

SECTION III - HEALTH HAZARD DATA

ACUTE EFFECTS OF OVEREXPOSURE:

EXPOSURE BY INHALATION MAY PRODUCE EYE, NOSE, AND THROAT IRRITATION. INHALATION OF HARMFUL AMOUNTS OF VAPOR MAY PRODUCE MILD CENTRAL NERVOUS SYSTEM DEPRESSION, CHARACTERIZED BY HEADACHE, NAUSEA, VERTIGO, AND STUPOR. INTRODUCTION OF HYDRO-THON INTO THE LUNGS, AS IN ASPIRATION OF VOMITUS FLUIDS, MAY PRODUCE CHEMICAL MEUMONIA. EXISTING RESPIRATORY DISORDERS OR SKIN DISEASES MAY BE AGGRAVATED BY EXPUSURE.

### NOTICE



0

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen—Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F,, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive-Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Éstimated.

FBL: Flammable—At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation-A primary route of exposure through breathing of vapors (see below).

IRR: Irritant-Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable-Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value-A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time-weighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

### DISCLAIMER"

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.





### AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 2 OF 3

ZEP MANUFACTURING COMPANY

DATE

: 07/16/86 ZEP IRONCLAD

EP MANUFACTURING COMPANY
ST IN MAINTENANCE PRODUCTS
SUPERSEDES: 05/09/86 PRODUCT NUMBER: 1365

SECTION III - HEALTH HAZARD DATA (CONTINUED)

CHRONIC EFFECTS OF OVEREXPOSURE:

REPEATED OR PROLONGED, SKIN CONTACT MAY PRODUCE MILD CENTRAL NERVOUS SYSTEM DE-PRESSION, CHARACTERIZED BY HEADACHE, NAUSEA, STUPOR, AND COMA. SKIN WHICH IS DEFATTED BY REPEATED EXPOSURE TO HYDROCARBON SOLVENTS IS MORE SUSCEPTIBLE TO IRRITATION, INFECTION, AND DERMITITIS. ANIMAL STUDIES OF THE EFFECTS OF PROLONGED INHALATION INDICATED A POTENTIAL FOR LUNG DAMAGE AND BLOOD PRODUCTION ABNORMALITIES, SOME OF WHICH WERE FATAL. RELEVANCE OF THESE STUDIES TO HUMAN HEALTH AND THE LEVELS OF EXPOSURE WHICH MIGHT PRODUCE THESE RESULTS, HAS NOT BEEN ESTABLISHED.

NONE OF THE HAZARDOUS INGREDIENTS ARE LISTED AS CARCINOGENS BY IARC, NTP, & OSHA

EST'D PEL/TLV: 100 PPM

PRIMARY ROUTES OF ENTRY: INH, SKIN.

HMIS CODES: HEALTH 1/FLAM, 1/REACT, O/PERS, PROTECT, X /CHRONIC HAZ, YES

FIRST AID PROCEDURES:

SKIN : WASH CONTAMINATED SKIN THROUGHLY WITH SDAP OR A MILD DETERGENT. APPLY A

SKIN CREAM WITH LANGLIN. GET MEDICAL ATTENTION IF IRRITATION PERSISTS.

: IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, OC-

CASIONALLY LIFTING UPPER AND LOWER LIDS. GET MEDICAL ATTENTION AT ONCE.

TAMBLE: MOVE EXPOSED PERSON TO FRESH AIR. IF IRRITATION PERSISTS,

GET MEDICAL ATTENTION PROMPTLY.

INGEST: IF SWALLOWED, DO NOT INDUCE VOMITING. IF VOMITING OCCURS, KEEP HEAD

BELOW HIP LEVEL. GET EMERGENCY MEDICAL ATTENTION IMMEDIATELY.

SECTION IV - SPECIAL PROTECTION INFORMATION

PROTECTIVE CLOTHING : WEAR NEOPRENE, NITRILE, OR NATURAL RUBBER GLOVES OR

GLOVES WITH PROVEN RESISTANCE TO THE INGREDIENTS LISTED.

EYE PROTECTION : WEAR TIGHT-FITTING SPLASH-PROOF SAFETY GLASSES

ESPECIALLY IF CONTACT LENSES ARE WORN.

RESPIRATORY PROTECTION: IF VENTILATION IS INADEQUATE, WEAR A PROPERLY FITTING

MSA OR USHA-APPROVED RESPIRATOR.

: VENTILATION SHOULD BE EQUIVALENT TO OUTDOORS. USE EX-VENTILATION -

HAUST FANS AND OPEN WINDOWS IN ENCLOSED SPACES.

and the second of the second o

SECTION V - PHYSICAL DATA

BOILING POINT (F) : 313F INI). SPECIFIC GRAVITY : 0.84 PERCENT VOLATILE BY VOLUME (%) : 76

VAPOR PRESSURE(MMHG): 2.0 VAPOR DENSITY(AIR=1): N/D EVAPORATION RATE(TOLUENE =1): 0.06

PH(CONCENTRATE)
PH(USE DILUTION OF SOLUBILITY IN WATER : NEGLIGIBLE : N/A

): N/A APPEARANCE AND ODOR : A SLIGHTLY VISCOUS, TAN OPAQUE LIQUID WITH SOLVENT ODOR

SECTION VI - FIRE AND EXPLOSION DATA

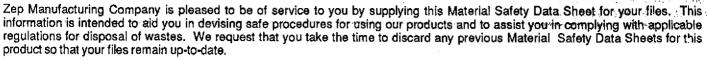
PEASH POINT(F) (METHOD USED): 103F (TCC }

FLAMMABLE LIMITS LEL N/D UEL N/D

EXTINGUISHING MEDIA : CO2, FOAM, DRY CHEMICAL

SPECIAL FIRE FIGHTING: NONE

UNUSUAL FIRE HAZARDS :





By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910,1200) and may be interpreted as follows:

### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen-Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F,, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive-Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Éstimated.

FBL: Flammable-At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxio-The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation-A primary route of exposure through breathing of vapors (see below).

IRR: Irritant-Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable-Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit-The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value-A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the ESTD PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This timeweighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry-this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.



### AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 3 OF 3

ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS DATE

: 07/16/86 ZEP IRONCLAD

SUPERSEDES: 05/09/86 PRODUCT NUMBER: 1365

SECTION VII - REACTIVITY DATA

STABILITY

: STABLE

INCOMPATIBILITY(AVOID) : STRONG ACIDS AND DXIDIZING AGENTS

POLYMERIZATION

: WILL NOT OCCUR

HAZARDOUS DECOMPOSITION: CARBON DIOXIDE, CARBON MONOXIDE, AND OTHER UNIDENTIFIED

DRGANIC COMPOUNDS.

SECTION VIII - S P I L L A N D DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: IMMEDIATELY ELIMINATE ALL FLAME, IGNITION AND HIGH-HEAT SOURCES. ABSORB SPILL ON INERT ABSORBENT MATERIAL (eg ZEP-O-ZORB). PICK UP AND PLACE RESIDUE IN A CLEAN, D. O. T. SPECIFICATION CONTAINER FOR DISPOSAL. WASH AREA THOROUGHLY WITH A DETERGENT SOLUTION AND RINGS WELL WITH WATER.

### WASTE DISPOSAL METHOD:

LIQUIDS CANNOT BE SENT TO LANDFILLS UNLESS SOLIDIFIED. UNUSABLE PRODUCT AND COLLECTED, SPENT MATERIAL MAY REQUIRE DISPOSAL AS A HAZARDOUS WASTE AT A PERMIT-TED TREATMENT/STORAGE/DISPOSAL FACILITY. IN MOST STATES HAZARDOUS WASTE IN TOTAL AMOUNTS OF 220 LBS. OR LESS PER MONTH MAY BE DISPOSED OF IN A CHEMICAL OR INDUSTRIAL WASTE LANDFILL. CONSULT LOCAL, STATE, AND FEDERAL AGENCIES FOR PROPER DISPOSAL METHOD IN YOUR AREA.

RORA HAZ, NASTE NOS.: DOO1

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN WHEN HANDLING AND STORING:

COMBUSTIBLE! STORE AND USE AWAY FROM HEAT, SPARKS, OPEN FLAME, OR ANY SOURCE OF IGNITION.

KELP OUT OF REACH OF CHILDREN.

STORE TIGHTLY CLOSED CONTAINER IN DRY AREA AT TEMPERATURES BETWEEN 40 AND 120 DEGREES F.

KEEP PRODUCT AWAY FROM SKIN AND EYES.

DO NOT BREATHE SPRAY MISTS OR VAPORS.

KESP DUT OF THE REACH OF CHILDREN.

### SECTION X - TRANSPORTATION DATA

DOT PROPER SHIPPING NAME

NONE

DOT HAZARD CLASS: N/A

DOT LABEL/PLACARD: NONE T I.D. NUMBER : N/A

EN TSCA CHEMICAL INVENTORY - ALL INGREDIENTS ARE LISTED

EPA CWA 40CFR PART 117 SUBSTANCE (RG IN A SINGLE CONTAINER): N/A

Appendix33-000339

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.



By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen-Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP). the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible-At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

CNS: Central Nervous System Depressant.
COR: Corrosive—Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

FBL: Flammable-At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation-A primary route of exposure through breathing of vapors (see below).

IRR: Irritant–Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable—Category is not appropriate for this product.
N/D: Not Determined—Insufficient information for a defermination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit-The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value-A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

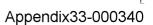
The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This timeweighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry-this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalizedsystemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers." "Empty" containers retain residue (liquid and/or vapor) and can be dangerous, DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.





### AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 1 OF 3

20-30

ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS DATE

: 07/16/86 ZEPSHEEN

SUPERSEDES: 05/22/86 PRODUCT NUMBER: 0216

SECTION I - E M E R G E N C Y C O N T A C T S

ZFP MANUFACTURING COMPANY NON-OFFICE HOURS, WEEKENDS, AND HOLIDAYS: AREA CODE 404 P.O. BOX 2015 ATLANTA, GEORGIA 30301

435-2973, 996-0899, 252-1587, 351-2952, 971-3367

TRANSPORTATION EMERGENCY

TELEPHONE (404)352-1680 (EASTERN TIME ZONE)

BETWEEN 8:00A.M.-5:00P.M. CHEMTREC: TOLL FREE 1-800-424-9300 ALL CALLS RECORDED DISTRICT OF COLUMBIA (202)483-7616 ALL CALLS RECORDED

400

SECTION II - H A Z A R D O U S I N G R E D I E N T S

DESIGNATIONS

TL.V EFFECTS (PPM) (SEE REVERSE) PROD.

FBL

\*\* ISOPARAFFINIC SOLVENT (BOILING RANGE 113-1430) ISOPAR E, HYDROTREATED HEAVY NAPHTHA (PETROLEUM)

CAS# 64742-48-9 RTECS# NONE

SPECIAL NOTE: ADVERSE HEALTH EFFECTS WOULD NOT BE EXPECTED UNDER RECOMMENDED CONDITIONS OF USE SO LONG AS PRESCRIBED SAFETY PRECAUTIONS ARE PRACTICED.

SECTION III - HEALTH HAZARD DATA

ACUTE EFFECTS OF OVEREXPOSURE:

THE SOLVENTS IN THIS PRODUCT, WHEN INHALED OR ABSORBED IN HARMFUL QUANTITIES, MAY PRODUCE CENTRAL NERVOUS SYSTEM DEPRESSION CHARACTERIZED BY HEADACHE, NAUSEA, DIZZINESS AND STUPOR. VAPORS OR SPRAY MISTS MAY BE IRRITATING TO NASAL AND RESP-'ATORY TRACT, PRODUCT MAY BE IRRITATING TO SKIN AND EYES RESULTING IN REDNESS, igspace CHING OR BURNING. INTRODUCTION OF SOLVENTS, AS IN ASPIRATION OF VOMITUS FLUID, MAY PRODUCE CHEMICAL PNEUMONIA. EXISTING RESPIRATORY DISORDERS AND SKIN DISEASES MAY BE AGGRAVATED BY EXPOSURE.

### NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.



By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen—Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F., chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive-Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Éstimated.

FBL: Flammable—At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation-A primary route of exposure through breathing of vapors (see below).

IRR: Irritant-Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable-Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value—A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time-weighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.



### AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 2 OF 3

ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS DATE

: 07/16/86 ZEPSHEEN

SUPERSEDES: 05/22/86 PRODUCT NUMBER: 0216

SECTION III - HEALTH HAZARD DATA (CONTINUED)

CHRONIC EFFECTS OF OVEREXPOSURE:

SKIN WHICH IS REPEATEDLY DEFATTED BY CONTACT WITH THIS PRODUCT MAY BE MORE

SUSCEPTIBLE TO IRRITATION, INFECTION, OR DERMITITIS.

ANIMALS STUDIES INDICATE A POTENTIAL FOR LIVER AND KIDNEY DAMAGE. RELEVANCE OF THESE STUDIES OR EXPOSURE LEVELS WHICH MIGHT PRODUCE THESE EFFECTS IN HUMANS HAS NOT BEEN ESTABLISHED.

NONE OF THE HAZARDOUS INGREDIENTS ARE LISTED AS CARCINOGENS BY IARC, NTP, & OSHA

EST'D PEL/TLV: NOT ESTABLISHED PRIMARY ROUTES OF ENTRY: INH.

HMIS CODES: HEALTH 1; FLAM. 3; REACT. 0; PERS. PROTECT. B ; CHRONIC HAZ. YES

FIRST AID PROCEDURES:

SKIN : WASH CONTAMINATED SKIN THROUGHLY WITH SOAP OR A MILD DETERGENT, APPLY A SKIN CREAM WITH LANGLIN. GET MEDICAL ATTENTION IF IRRITATION PERSISTS.

EYES : IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, OC-CASIONALLY LIFTING UPPER AND LOWER LIDS. GET MEDICAL ATTENTION AT ONCE.

TNHALE: MOVE EXPOSED PERSON TO FRESH AIR. IF IRRITATION PERSISTS, GET MEDICAL ATTENTION PROMPTLY.

INGEST: IF SWALLOWED, DO NOT INDUCE VOMITING. IF VOMITING OCCURS, KEEP HEAD

BELOW HIP LEVEL. GET EMERGENCY MEDICAL ATTENTION IMMEDIATELY.

SECTION IV - S P E C I A L P R O T E C T I O N I N F O R M A T I O N

PROTECTIVE CLOTHING : WEAR NITRILE GLOVES OR USE GLOVES WITH DEMONSTRATED RESISTANCE TO THE INGREDIENTS IN THIS PRODUCT.

EYE PROTECTION

: USE OF TIGHT-FITTING SAFETY GLASSES OR GOGGLES IS STRON-GLY RECOMMENDED, ESPECIALLY WHEN WEARING CONTACT LENSES.

RESPIRATORY PROTECTION: KEEP FACE AWAY FROM SPRAY MIST AND DO NOT BREATHE

VAPORS.

VENTILATION

: IF VAPORS ARE DETECTED, VENTILATE WORK AREA BY

OPENING WINDOWS AND USING EXHAUST FANS.

SECTION V - P H Y S I C A L D A T A (FOR FILL MATERIAL ONLY)

BOILING POINT (F) : APPROX. 220F SPECIFIC GRAVITY

: ^ 1.0

PERCENT VOLATILE BY VOLUME (%) : 93 EVAPORATION RATE(WATER

=1):1.0

VAPOR DENSITY(AIR=1): N/A
SOLUBILITY IN .... SOLUBILITY IN WATER : DISPERSES

PH(USE DILUTION OF PH(CONCENTRATE)

: N/A ): N/A

APPEARANCE AND ODOR :A TAN, MILKY THIN LIQUID WITH A PLEASANT CITRUS AROMA.

SECTION VI - FIRE AND EXPLOSION DATA

ASH POINT(F) (METHOD USED): FLAMMABLE FLAMMABLE LIMITS LEL N/D UEL N/D

(CSMA)

EXTINGUISHING MEDIA : N/A-PRINCIPAL HAZARD PRESENTED BY BURSTING CANS SPECIAL FIRE FIGHTING: DIRECT STREAM OF WATER ONTO INTACT CONTAINERS

UNUSUAL FIRE HAZARDS : DIRECT WATER ONTO INTACT CONTAINERS TO PREVENT BURSTING.

### NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material. Safety Data Sheets for this product so that your files remain up-to-date.



By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen-Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible-At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Decressant.

COR: Corrosive-Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Éstimated.

FBL: Flammable-At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic—The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation—A primary route of exposure through breathing of vapors (see below).

IRR: Irritant–Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable—Category is not appropriate for this product.
N/D: Not Determined—Insufficient information for a determination for this item.

N/D: Not Determined-Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration. OSHA: Occupational Safety and Health Administration.
PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects,

SEN: Sensitizer—Causes allergic reaction after repeated exposure;

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value—A time-weighted-average exposure value established by the ACGIH for the work period described ( under PEL, above. TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This timeweighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry-this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalizedsystemic or specific-organ toxic effect. . Nadavi valo odak imomala katolik komit

As a further word of caution. Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death.

Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet. and the state of t



### AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 3 OF 3

ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS DATE

: 07/16/86 ZEPSHEEN

SUPERSEDES: 05/22/86 PRODUCT NUMBER: 0216

SECTION VII - REACTIVITY DATA

STABILITY

: STABLE

INCOMPATIBILITY(AVOID) : HEAT, OPEN FLAME, SPARK, AND OXIDIZING AGENTS

POLYMERIZATION : WILL NOT OCCUR

HAZARDOUS DECOMPOSITION: CARBON DIOXIDE, CARBON MONOXIDE, AND OTHER UNIDENTIFIED

ORGANIC COMPOUNDS.

SECTION VIII - SPILL AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: OBSERVE SAFETY PRECAUTIONS IN SECTIONS 4 & 9 DURING SPILL CLEAN-UP. LARGE SPILLS ARE UNLIKELY DUE TO PACKAGING. SPILL MAY BE ABSORBED ON AN INERT ABSORB-ENT (EG ZEP-0-ZORB), PLACED IN A SUITABLE CONTAINER FOR DISPOSAL. WASH AREA THOROUGHLY WITH A DETERGENT SOLUTION AND RINSE WELL WITH WATER.

WASTE DISPOSAL METHOD:

PRODUCT IS CONSUMED IN USE. DO NOT CRUSH, PUNCTURE OR INCINERATE SPENT CONTAIN-ERS. LARGE NUMBERS OF AEROSOL CONTAINERS MAY REQUIRE HANDLING AS A HAZARDOUS WASTE, BUT IN MOST STATES TOTAL HAZARDOUS WASTE QUANTITIES LESS THAN 220 LBS PER MONTH MAY ALLOW DISPOSAL IN A CHEMICAL OR INDUSTRIAL WASTE LANDFILL. CONSULT LOCAL, STATE AND FEDERAL AGENCIES FOR THE PROPER DISPOSAL METHOD IN YOUR AREA.

RCRA HAZ. WASTE NOS.: DOOL

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN WHEN HANDLING AND STORING:

FLAMMABLE! STORE AND USE AWAY FROM HEAT, SPARKS, OPEN FLAME, AND ANY SOURCE OF IGNITION.

DO NOT STORE AT TEMPERATURES ABOVE 120F. OR IN DIRECT SUNLIGHT. DO NOT PUNCTURE OR INCINERATE CONTAINER.

KEEP PRODUCT AWAY FROM SKIN AND EYES.

DO NOT BREATHE SPRAY MISTS OR VAPORS.

KEEP AWAY FROM FOOD AND FOOD PRODUCTS.

KEEP OUT OF THE REACH OF CHILDREN.

SECTION X - TRANSPORTATION DATA

DOT PROPER SHIPPING NAME

CONSUMER COMMODITY

DOT HAZARD CLASS: N/A

DOT LABEL/PLACARD: ORM-D T I.D. NUMBER : N/A

\_\_'A TSCA CHEMICAL INVENTORY - ALL INGREDIENTS ARE LISTED

EPA CWA 40CFR PART 117 SUBSTANCE(RQ IN A SINGLE CONTAINER): NONE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen-Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F,, chemical gives off enough vapor to ignite if a source of ignition is present.
CNS: Central Nervous System Depressant.
COR: Corrosive—Causes irreversible alterations in living tissue (e.g. burns).
EIR: Eye Irritant Only—Causes reversible reddening and/or inflammation of eye tissues. ignition is present.

FBL: Flammable-At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation-A primary route of exposure through breathing of vapors (see below).

IRR: Irritant-Causes reversible effects in living tissues (e.g.,inflammation).

N/A: Not Applicable—Category is not appropriate for this product.

N/D: Not Determined—Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

 And Street, and Caracan Affiliations
 And Annual Agencies Affiliation OSHA: Occupational Safety and Health Administration.
PEL: Permissible Exposure Limit-The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value-A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This timeweighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5-days per week, without the adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry-this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalizedsystemic or specific-organ toxic effect. 78 Part - 37 18 Part - 96

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.

and the second section of the second 
er de la estada de l



### AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 1 OF 3

X IN

ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS DATE

: 07/20/86 ZEP NATURAL

SUPERSEDES: 07/01/85 PRODUCT NUMBER: 0577

TLV

EFFECTS.

SECTION I - E M E R G E N C Y C O N T A C T S

ZEP MANUFACTURING COMPANY NON-OFFICE HOURS, WEEKENDS, AND HOLIDAYS: AREA CODE 404 P.O. BOX 2015 435-2973, 996-0899, 252-1587, 351-2952, 971-3367

ATLANTA, GEORGIA 30301 LOCAL POISON CONTROL CENTER ...........

TELEPHONE (404)352-1680 TRANSPORTATION EMERGENCY

BETWEEN 8:00A. M. -5:00P. M. CHEMTREC: TOLL FREE 1-800-424-9300 ALL CALLS RECORDED (EASTERN TIME ZONE) DISTRICT OF COLUMBIA (202)483-7616 ALL CALLS RECORDED

SECTION II - HAZARDOUS INGREDIENTS

DESIGNATIONS (PPM) (SEE REVERSE) PROD. \*\* SODIUM METASILICATE \*\* silicic acid (H2-Si-O3) di-N/D COR <5 sodium salt: water glass; CAS# :6834-92-0: RTECS# VV9275000; DUST LIMIT= 2 MG/M3 (FOR POWDERS DNLY) \*\* NONYLPHENOXYPOLY(ETHYLENEOXY)ETHANOL \*\* N/D EIR <.5 poly(oxy-1,2-ethanediyl), alpha-(nonylphenyl)-omegahudroxu; CAS# 9016-45-9; RTECS@ MD905000; OSHA PEL-M/D\*\* OUATERNARY AMMONIUM CHLORIDES \*\* blend of alkul N/D COR TOX CBL <5 dimethylbenzyl ammonium chlorides and alkyl dimethyl ethulbenzul ammonium chlorides; CAS# 55963-06-9; RTECS# EI1101000; DSHA PEL-N/D

\* TETRASODIUM ETHYLENEDIAMINE TETRAACETATE \*\* N/D IRR **C5** 

\_uulenedinitrilo tetra-acetic acid; EDTA; CAS#

64-02-8; RTECS# AH4025000

SPECIAL NOTE: ADVERSE HEALTH EFFECTS WOULD NOT BE EXPECTED UNDER RECOMMENDED CONDITIONS OF USE SO LONG AS PRESCRIBED SAFETY PRECAUTIONS ARE PRACTICED.

SECTION III - HEALTH HAZARD DATA

ACUTE EFFECTS OF OVEREXPOSURE:

PRODUCT IN CONCENTRATED FORM IS A SEVERE EYE IRRITANT. OVER-EXPOSURE MAY LEAD TO EYE TISSUE DAMAGE WHICH CAN BE PERMANENT. SKIN CONTACT MAY PRODUCE IRRITATION.

Appendix33-000347

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.



By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen-Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP). the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible-At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive-Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL: Flammable-At temperatures under 100°F., chemical gives off enough vapor to ignitio if a source of ignition is present.

HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation-A primary route of exposure through breathing of vapors (see below).

IRR: Irritant-Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable-Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration...

PEL: Permissible Exposure Limit-The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value-A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This timeweighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry-this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalizedsystemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.





### AND SAFE HANDLING AND DISPOSAL INFORMATION

ZEP MANUFACTURING COMPANY DATE :
ST IN MAINTENANCE PRODUCTS SLIPS REFERE.

: 07/20/86 ZEP NATURAL

SUPERSEDES: 09/01/85 PRODUCT NUMBER: 0677

SECTION III - HEALTH HAZARD DATA (CONTINUED)

CHRONIC EFFECTS OF OVEREXPOSURE:

REPEATED OR PROLONGED SKIN CONTACT MAY PRODUCE CHRONIC INFLAMMATION OR DERMATIT-IS, CHARACTERIZED BY REDNESS, SCALING, OR ITCHING. REPEATED EYE EXPOSURE MAY PRODUCE CHRONIC INFLAMMATION OF THE EYE OR CORNEAL DAMAGE.

NONE OF THE HAZARDOUS INGREDIENTS ARE LISTED AS CARCINOGENS BY IARC, NTP, & OSHA

EST'D PEL/TLV: NOT ESTABLISHED PRIMARY ROUTES OF ENTRY: N/A

HMIS CODES: HEALTH 3/FLAM, O/REACT, O/PERS, PROTECT, B /CHRONIC HAZ, NO

FIRST AID PROCEDURES:

SKIN : IMMEDIATELY FLUSH CONTAMINATED SKIN WITH PLENTY OF WATER FOR AT LEAST 15

MINUTES. GET MEDICAL ATTENTION IF IRRITATION DEVELOPS.

EYES : IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, OC-

CASIONALLY LIFTING UPPER AND LOWER LIDS. GET MEDICAL ATTENTION AT ONCE.

TAMBALE: MOVE EXPOSED PERSON TO FRESH AIR. IF IRRITATION PERSISTS,

GET MEDICAL ATTENTION PROMPTLY.

INGEST: IF THIS PRODUCT IS SWALLOWED, DO NOT INDUCE VOMITING. IF VICTIM IS

CONSCIOUS GIVE PLENTY OF WATER TO DRINK. GET MEDICAL ATTENTION AT ONCE.

SECTION IV - SPECIAL PROTECTION INFORMATION

PROTECTIVE CLOTHING : WEAR IMPERVIOUS GLOVES THAT HAVE DEMONSTRATED RESIST-

ANCE TO THE INGREDIENTS IN THIS PRODUCT.

EYE PROTECTION : WEAR SPLASH-PROOF SAFETY GOGGLES ESPECIALLY IF CONTACT

LENGES ARE WORM.

RESPIRATORY PROTECTION: RESPIRATORY PROTECTION MAY BE UNNECESSARY SINCE PRODUCT

DOES NOT GIVE OFF SIGNIFICANT QUANTITIES OF VAPOR.

VENTILATION : IF VAPORS ARE DETECTED, VENTILATE WORK AREA BY

OPENING WINDOWS AND USING EXHAUST FAMS.

SECTION V - PHYSICAL DATA

BOILING POINT (F): APPROX. 215F SPECIFIC GRAVITY : 1.06
VAPOR PRESSURE(MMHG): N/A PERCENT VOLATILE BY VOLUME (%) : 83.2
VAPOR DENSITY(AIR=1): N/A EVAPORATION RATE(WATER =1): ~1

SOLUBILITY IN WATER : COMPLETE PH(CONCENTRATE) : 12.9

PH(USE DILUTION OF 4 OZ/GAL ): 11.4-11.7

APPEARANCE AND ODOR : A CLEAR, COLORLESS LIQUID WITH ESSENTIALLY NO ODOR

SECTION VI - FIRE AND EXPLOSION DATA

·

FEASH POINT(F) (METHOD USED): NONE (TCC )

FLAMMABLE LIMITS LEL N/A UEL N/A EXTINGUISHING MEDIA : NOT COMBUSTIBLE

SPECIAL FIRE FIGHTING: N/A UNUSUAL FIRE HAZARDS : NONE

PAGE 2 OF 3

### NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen—Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible–At temperatures between 100°F, and 200°F., chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive-Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL: Flammable-At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation-A primary route of exposure through breathing of vapors (see below).

IRR: Irritant-Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable-Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value-A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the ESTD PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time-weighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted—from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data-Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.



### AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 3 OF 3

ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS DATE

: 07/20/86 ZEP NATURAL

SUPERSEDES: 09/01/85 PRODUCT NUMBER: 0677

SECTION VII - REACTIVITY DATA

STABILITY

: STABLE

INCOMPATIBILITY (AVOID) : STRONG OXIDIZING AGENTS

POLYMERIZATION : WILL NOT OCCUR

HAZARDOUS DECOMPOSITION: CARBON DIOXIDE, CARBON MONOXIDE, AND OTHER UNIDENTIFIED

ORGANIC COMPOUNDS.

SECTION VIII - SPILL AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: OBSERVE SAFETY PRECAUTIONS IN SECTIONS 4 % 9 DURING CLEAN-UP. ABSORB SPILL ON AN INERT ABSORBENT MATERIAL (eg ZEP-O-ZORB); PICK UP AND PLACE IN A CLEAN D.O.T. SPECIFICATION CONTAINER FOR DISPOSAL. WASH AREA THOROUGHLY WITH A DETERGENT SOLUTION AND THEN RINSE WELL WITH WATER.

### WASTE DISPOSAL METHOD:

LIQUIDS CANNOT BE SENT TO LANDFILLS UNLESS SOLIDIFIED. UNUSABLE PRODUCT AND SOME COLLECTED, SPENT USE-DILUTIONS MAY REQUIRE DISPOSAL AS A HAZARDOUS WASTE AT A PERMITTED TREATMENT/STORAGE/DISPOSAL FACILITY. IN MOST STATES HAZARDOUS WASTES IN TOTAL AMOUNTS OF 220 LBS. OR LESS PER MONTH MAY BE DISPOSED OF IN A CHEMICAL OR INDUSTRIAL WASTE LANDFILL. IF COMPANY EFFLUENT IS ULTIMATELY TREATED BY A PUBLICLY OWNED TREATMENT WORKS, NEUTRALIZATION OF SPENT TANK-SOLUTIONS WITH SUB-FIGUENT DISCHARGE TO THE SEWER MAY BE POSSIBLE. CONSULT LOCAL, STATE AND FED-LAL AGENCIES FOR PROPER DISPOSAL METHOD IN YOUR AREA.

RORA HAZ. WASTE NOS.: DOO2

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN WHEN HANDLING AND STORING:

STORE TIGHTLY CLOSED CONTAINER IN DRY AREA AT TEMPERATURES BETWEEN 40 AND 120 DEGREES F.

STORE AWAY FROM STRONG ACIDS AND OXIDIZING COMPOUNDS.

KEEP PRODUCT AWAY FROM SKIN AND EYES.

KERP OUT OF THE REACH OF CHILDREN.

SECTIONX - TRANSPORTATION DATA

DOT PROPER SHIPPING NAME

MOME

DOT HAZARD CLASS: N/A

T I.D. NUMBER : N/A DOT LABEL/PLACARD: NONE

ETA TSCA CHEMICAL INVENTORY - ALL INGREDIENTS ARE LISTED

EPA CHA 40CFR PART 117 SUBSTANCE (RG IN A SINGLE CONTAINER): N/A

### NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.



By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen—Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F,, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive-Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Éstimated.

FBL: Flammable—At temperatures under 100°F.; chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation-A primary route of exposure through breathing of vapors (see below),

IRR: Irritant-Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable-Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value—A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time-weighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.





February 10, 1995

ASHGROVE CEMENT CO 13939 N RIVERGATE PORTLAND, OR 972036608

IN ACCORDANCE WITH THE HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200) FROM THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), WE ARE ENCLOSING A SAFETY DATA SHEET (MSDS) ON THE FOLLOWING:

PRODUCT CODE PRODUCT DESCRIPTION

D40010 CHEVRON DELO 400 10W

THE MSDS'S SHOULD BE UTILIZED FOR THE EDUCATION AND TRAINING OF YOUR EMPLOYEES AS TO THE PROPERTIES, HAZARDS, AND PROTECTION REQUIREMENTS RELATED TO THE PRODUCTS WHICH YOU PURCHASE FROM PRIESTLEY OIL AND CHEMICAL

SINCERELY YOURS,

Vincent J. McClain
ENVIRONMENTAL AND SAFETY COORDINATOR

PORTLAND 2429 North Borthwick Avenue, Portland, OR 97227-1776 Roy 10670 Revision OR 97213 0570

P.O. Box 12570, Portland, OR 97212-0570 Telephone: (503) 288-5294

**SEATTLE** (206) 223-1356

(206) 223-1356

WATS: 1-800-422-5069 • FAX: (503) 288-0421

VANCOUVER

7208 N.E. St. Johns Road, Vancouver, WA P.O. Box 530 Vancouver, WA 98666-0530 Telephone: (206) 694-2521 • (503) 239-1566 East Cestomer: This Bulletin contains important environmental, health and toxicology information for your employees who recently ordered this product, Please make sure this information is given to them. If you resell this product, this Bulletin should be given to the Buyer. This Form may be reproduced without permission.

Chevron U.S.A. Inc.

# **Material Safety Data Sheet**

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200). (Formerly Called MATERIAL INFORMATION BULLETIN)



CHEVRON DELO 400 Motor Oil SAE 30

CPS 225003

CAUTION!

MAY CAUSE EYE IRRITATION KEEP OUT OF REACH OF CHILDREN

### TYPICAL COMPOSITION

Highly refined base oils (CAS 64742-57-0 or 64742-01-4 and 64742-54-7 or 64742-65-0 or 64742-55-8, 72623-87-1 and 72623-85-9)

Additives including inhibitors, dispersants, calcium phenate and zinc alkyl dithiophosphate (CAS 68649-42-3)

<15%

>85%

### EXPOSURE STANDARD

No Federal OSHA exposure standard or ACGIH TLV has been established for this material. Based upon information reviewed to date, this product fits the definition for mineral oil mist. The applicable Federal OSHA exposure standard and ACGIH TLV (1985-86) for mineral oil mist is  $5~\rm mg/m^3$ .

### PHYSIOLOGICAL & HEALTH EFFECTS

### EMERGENCY & FIRST AID PROCEDURES

### Eyes

May cause eye irritation.

Flush eyes immediately with fresh water for at least 15 minutes while holding the eyelids open. If irritation persists, see a doctor.

### Skin

Expected to cause no more than minor skin irritation following prolonged or frequently repeated contact. See Additional Health Data.

Wash skin thoroughly with soap and water. Launder contaminated clothing.

### Inhalation

Not expected to be acutely toxic by inhalation. Breathing mineral oil mist at concentrations in air that exceed the recommended exposure standard can cause respiratory irritation or discomfort. See Additional Health Data.

If respiratory discomfort or irritation occurs, move the person to fresh air. See a doctor if discomfort or irritation continues.

### Ingestion

Not expected to have acute systemic toxicity by ingestion.

RECEIVED
JAN 1 2 1987

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

X-IRE621 (07-85)

No. 223

Rev. 5 08/12/86

### ADDITIONAL HEALTH DATA

See following pages

### SPECIAL PROTECTIVE INFORMATION

Eye Protection: Do not get in eyes. Eye contact can be avoided by wearing chemical safety goggles.

**Skin Protection:** No special skin protection is necessary.

Respiratory Protection: No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standard, the use of an approved respirator is recommended.

**Ventilation:** Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

### FIRE PROTECTION

Flash Point: (COC)428°F(220°C) Min.

Autoignition Temp.: NDA Flammability Limits: n/a

Extinguishing Media: CO<sub>2</sub>, Dry Chemical, Foam, Water Fog.

Special Fire Fighting Procedures: For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus. See Hazardous Decomposition Products. Read the entire MSDS.

### SPECIAL PRECAUTIONS

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently.

CAUTION! Do not use pressure to empty drum or explosion may result.

### ENVIRONMENTAL PROTECTION

Environmental Impact: This material is not expected to present any environmental problems other than those associated with oil spills.

Precautions if Material is Released OI Spilled: Stop the source of the leak or release. Clean up releases as soon as possible, observing precautions in Special Protective Information. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

Waste Disposal Methods: Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

### REACTIVITY DATA

Stability (Thermal, Light, etc.): Stable. Incompatibility (Materials to Avoid): May react with strong oxidizing materials. Hazardous Decomposition Products: Normal combustion forms carbon dioxide and wate vapor and may produce oxides of sulfur, nitrogen and phosphorus; incomplete combustion can produce carbon monoxide. Hazardous Polymerization: Will not occur.

### PHYSICAL PROPERTIES

Solubility: Insoluble in water. Miscible with hydrocarbon solvents.

Appearance (Color, Odor, etc.): Dark brown liquid.

Boiling Point: n/a Melting Point: n/a

Specific Gravity: 0.88-0.92 @ 15.6/15.6°C

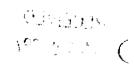
Vapor Pressure: n/a
Vapor Density (Air=1): n/a
Percent Volatile (Volume %): n/a

Evaporation: n/a

Pour Point: -18°C (Max.)

Viscosity: 11.7-12.5 cSt @ 110°C

n/a = Not Applicable
NDA = No Data Available



The above information is based on data of which we are aware and is believed to be correct as of the date hereof. Since the information contained herein may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon the condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

2

# **Material Safety Data Sheet**

CHEVRON DELO 400 Motor Oil SAE 30

CPS 225003

### ADDITIONAL HEALTH DATA

Signs and symptoms of respiratory tract irritation may include, but may not be limited to, one or more of the following, depending on concentration and length of exposure: nasal discharge, sore throat, coughing, bronchitis, pulmonary edema and difficulty in breathing.

Several zinc alkyl dithiophosphates (ZDDPs) have been reported to have weak mutagenic activity in cultured mammalian cells but only at concentrations that were toxic to the test cells. Also, in the past, a ZDDP similar to the one used in this product was reported to cause adverse effects on the testicles of rabbits but not of rats after applications to the skin for several weeks. However, follow-up studies in rabbits indicated that the testicular effects were due to a species-specific reaction to stress caused by severe skin irritation and weight loss and not a direct chemical effect of the ZDDP. While toxicologists at Chevron do not believe that there is any mutagenic or testicular risk to workers exposed to ZDDPs as described above, the precautions outlined in this MSDS should be followed.

This product also contains calcium phenate. When a similar calcium phenate was applied to the skin of rabbits five days/week for four weeks, the animals developed adverse testicular effects. Studies with other chemicals have since shown that rabbits may develop similar testicular effects due to stress rather than to chemical toxicity. We further investigated the effects of calcium phenates in rats, a species now recognized as more appropriate than rabbits for investigating toxicity by repeated skin exposures. Calcium phenate applied five days/week for four weeks to the skin of rats did not produce adverse testicular effects. Based on these data, we believe that there is no risk of male reproductive impairment from exposure to calcium phenate in the workplace.

This product contains base oils which the International Agency for Research on Cancer (IARC) classifies as having no evidence of carcinogenic potential.

This product may contain petroleum base oils refined by a combination of severe hydrocracking and hydrotreating. The carcinogenic potential of paraffinic base oils prepared by this process is not specifically addressed by OSHA, NTP, or IARC. However, the process conditions, chemical analyses, and the results of Ames tests all support our opinion that these oils are not carcinogenic.

During use in engines, contamination of oil with low levels of cancer-causing combustion products occurs. Used motor oils have been shown to cause skin cancer in mice following repeated application and continuous exposure. Brief or intermittent skin contact with used motor oil is not expected to have serious effects in humans if the oil is thoroughly removed by washing with soap and water. See Chevron Material Safety Data Sheet No. 1793 for additional information on used motor oil.

X-IRON: 10225 Rev. 5 08/12/86



### North American Refractories Co.

900 Hanna Building 1422 Euclid Avenue Cleveland, Ohio 44115 216/621-5200

### NORTH AMERICAN REFRACTORIES PRODUCT SAFETY DATA SHEET

**MANUFACTURER** 

MSDS # 3044-00

NORTH AMERICAN REFRACTORIES

Vendor:

Emergency Phone Number East (814) 236~3890 West (415) 432-4741

Date Issued: 08/28/86 Date Revised: 02/10/86

Product Type: Refractory Castable / Gun Material

Trade Name: REFRACRETE ESC

SECTION I - PRODUCT IDENTIFICATION

Chemical Name: Fireclay Castable A1203, SiO2, Ca0 Chemical Family:

SECTION II - CHEMICAL COMPOSITION

Hazardous Ingredients: CAS Number: PCT:

Crystalline Silica N/A 25% less than

Other Ingredients: CAS Number: PCT:

Alumina Silicate 56402-68-4 **75%** less than Hydrous Alumina Silicate 1332-58-7 less than 10% Hydraulic Setting Cement 12005-57-1 less than 35%

SECTION III - PHYSICAL DATA

Appearance and Odor: Tan, granular, dry mixture, odorless.

\*\*\*\*\*\*\*\*\* SECTION IV - FIRE AND EXPLOSION HAZARD \*\*

Flammability: This product is non-flammable and will not support

combustion.

Threshold Limit Value: For respirable dust: 10 divided by (%Qtz. + 2)

SECTION V - HEALTH HAZARD

expressed as mg/m3.

Effects of Overexposure: Cement may cause irritation to skin and eyes.

### North American Refractories Co.

900 Hanna Building 1422 Euclid Avenue Cleveland, Ohio 44115 216/621-5200

Chronic exposure to dust could contribute to silicosis.

Emergency and First Aid Data:

Eyes: Flush with water and get medical help. Eyes: Flush with water for 15 minutes and get

medical help.

水水水水水水水水水水水水水水水水水水水 SECTION VI - REACTIVITY DATA

Stability and Reactivity: This product is stable and non-reactive.

SECTION VII - SPILL AND LEAK PROCEDURES \*\*\*\*\*\*

Steps to be Taken in Case of a Spill:

Avoid generating dust exposure during cleanup.

Waste Disposal Method: Dispose of material according to local, state or federal regulations and as final used condition of

the product dictates.

\*\*\*\*\*\*\*\*\*\*\* SECTION VIII - INDUSTRIAL HYGIENE INFORMATION \*\*\*\*\*

Ventilation: Local exhaust recommended to maintain exposures

below TLV.

Respiratory Protection: Approved dust type for exposures above TLV.

Protective Gloves: Impervious gloves recommended.

Eye Protection: Recommended.

\*\*\*\*\*\*\*\*\*\* SECTION IX - SPECIAL PRECAUTIONS

Special Precautions: Avoid dust generation. Precautionary Labeling: Product contains crystalline silice and

hydraulic setting cement.

WARNING: Prolonged inhalation of product

dust may cause delayed lung injury (silicosis). Contact may cause irritation to eyes and skin.

Material Safety Data Sheet

Alay be used to comply with

M's Hazard Communication Standard, CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration

(Non-Mandatory Form) Form Approved OMB No. 1218-0072

NO:1059



Palmetto Packing #1030 AF		Note: Blank spa Information	ces are not parmitted. It is available, the apace	any sem is not an must be marked to	piceble, er no 7 indicete shet.
Section (					
Manutacturer's Name		Emergency Tele #215-256-9	phone Number 521		<del></del>
Address (Number, Street, City, State, and ZIP Code)		Telephone Num	per for information		
PALMETTO INC. SUBSIDIARY OF		#215-256-9	521	······································	
GREENE. TWEED & COMPANY	,	Data Prepared 9-11-86		•	
25 ENGERMAN AVENUE		Signature of Pre	parer (optional) .		
DENTON MD 21629					
Section II — Hazardous Ingredients/Identity	Information			•	
Hazardous Components (Specific Chemical Identity; Comm	non Name(s))	osha pel	ACGIH TLV	Other Limits Recommended	44 (optional)
Polytetrafluoroethylene (CAS No. 9	002-84-0)	N/K	N/K	N/A	
Polytetrafluoroethylene decomposit	ion produ	cts are haz	ardous as list	ted in Secti	on V.
Graphite (CAS No. 7782-42-5)		N/K	2.5 mg/m <sup>3</sup>	N/A	-
Section ill — Physical/Chemical Characteris Bolling Point Vapor Pressure (mm Hg.) Vapor Density (AIR = 1)		Specific Gravity Melting Point Eveporation Ref	(HgO = 1)		2.2 -2.5 N/A
Adm name April - 1)	N/A	(Butyl Acetate =		•	N/A_
Solubility in Water  N/A  Appearance and Odor  Black - Odorless  Section (V - Fire and Explosion Hazard Da					
Flash Point (Method Used)		Flammable Lim	4.5	LEL	UEL
N/A Extragushing Media	·	N/A			
Water Foam CO2 Dry Chemical Special Fire Fighting Procedures Self-contained breathing apparatus product.	should b	e used if	Fire involves	large quant	ities of
Unusual Fire and Explosion Hazards		<u>:</u> _			· · · · · · · · · · · · · · · · · · ·
PTFE will hum in an atmosphere of	1007 Oxy	gen with is	nition source	present.	Some smoke
produced.	1.65				·
(Reproduce locally)		19 No. 19	JUNS	0 1305 CB	4A 174, Sept. 1985

The information on this MSDS is given in good faith, but no warranty, expressed or implied a made.

Working one Prices Avoid contaminating tobacco with PIFE.



# Product Data:

95/8K65

**MATERIAL:** QUADRASYN'\* Kevlar† Composite Fiber heavily Impregnated with exclusive IMPREGLOD'\* solid impregnant/lubricant.

CONSTRUCTION: Flance require mixed TEMPERATURE LIMITED TO \$0000 (315) OF FLUID RESISTANCE \* province and the first control of the first

PV FACTOR: 30 BN 30 SNAFT BURFAUE SPIED! 100 NO SPEND 100 A 50 M

SHAFT WEAR Countries on a lower of an goals ones and established processes.

AUNING FRICTION: Much lower than graphed a water of a cause ign

ABRASION RESISTANCE: Moderate to night

Forest mitted last maked upon the experience and \*or what profit is to you apply as in the contract and should be the contract maked by defermine superior risks earlied about the four profits and or the contract maked and the con



nemos free braided packing specifically of the construction specifically of the construction of the constr

#1000AF is Otalged from themselved into its according to the positional and heavily imprograted with selection to the newspecies of MATHETE 1817 and the positional mathetes and the positional mathetes and the positional mathetes great acquaintational acquaintational mathetes and acquaintational m

Higher control of the 
 utricant, in ally high. -. sand pres-Tes of seal-4 packings. ાંદ in lower the shaft or -, frictional a packing and Huid loss . He and inans cooler 11 on). ಾಗಿರೇಶ for ≕aam, oils, - 05 and al-

Size	11.				2		Steady Steen 17 Strain Land Land Land				terminal and decimal and				7.6	
and the second s							de anteina late ven		·		A	y y			23,8	25,4
LENGTh							1201							5 - 3	2.8	2.5
in Ping.	V − O		de .		3	12	32 1	9.4	2.96	*****	, ;	2 H	2.26	1 20	1,86	1,67
		res mandas	e de la composition della comp	COQU COQU COQU COQU COQU COQU COQU COQU	o (A) (		1711 1411 1711 1411 1884 1884 188			i in the shift						



delinated by:

SUPERS AMERICAN ENGINEERED PACKINGS SINCE 1863



# MATERIAL SAFETY DATA SHEET

#### AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 1 OF 3

70-80

5 - 10

< 5

ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS

DATE

: 09/13/86 ZEP ZD

SUPERSEDES: 09/07/84 PRODUCT NUMBER: 1791

SECTION I - EMERGENCY CONTACTS

ZEP MANUFACTURING COMPANY NON-OFFICE HOURS, WEEKENDS, AND HOLIDAYS: AREA CODE 404 P.O. BOX 2015 435-2973, 994-0899, 252-1587, 351-2952, 971-3367

TELEPHONE (404)352-1680 TRANSPORTATION EMERGENCY

BETWEEN 8:00A. M. -5:00P. M. CHEMTREC: TOLL FREE 1-800-424-9300 ALL CALLS RECORDED

(EASTERN TIME ZONE)

DISTRICT OF COLUMBIA (202)483-7616 ALL CALLS RECORDED

N/D

100

IRR CBL SEN

FBL IRR

SECTION II - HAZARDOUS INGREDIENTS

DESIGNATIONS TLV EFFECTS % IN (PPM) (SEE REVERSE) PROD.

dmp: CAS# 131-11-3; RTECS# 1575000; OSHA PE(-5 mo/m3.

\*\* PROPRIETARY FRAGRANCE \*\* a blend of terpenes, esters, and aldehudes; CAS# NONE; RTECSK NONE; DSHA

PEL -N/D

\*\* AMYL ACETATE \*\* acetic acid, pentylester (mixed isomers); banana oil; CAS# 53496-15-4; RTECS#

AJ2010000; OSHA PSE 100 PPM

SPECIAL NOTE: ADVERSE HEALTH EFFECTS WOULD NOT BE EXPECTED UNDER RECOMMENDED CONDITIONS OF USE SO LONG AS PRESCRIBED SAFETY PRECAUTIONS ARE PRACTICED.

SECTION III - HEALTH HAZARD BATA

ACUTE EFFECTS OF OVEREXPOSURE:

THIS PRODUCT CAN BE AN EYE IRRITANT. INFLAMMATION OF EYE TISSUE IS CHARACTERIZED BY REDNESS, WATERING, AND/OR INCHING.

INHALATION MAY PRODUCE UPPER RESPIRATORY IRRITATION CHARACTERIZED BY SORE THROAT DIFFICULTY IN BREATHING.

# NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

# ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen-Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible-At temperatures between 100°F, and 200°F,, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive-Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only—Causes reversible reddening and/or inflammation of eye tissues. Est'd: Estimated.

FBL: Flammable-At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic~The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below),

INH: Inhalation—A primary route of exposure through breathing of vapors (see below).

IRR: Irritant-Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable-Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit-The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value-A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the ESTD PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This timeweighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry-this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalizedsystemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

#### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.



# MATERIAL SAFETY DATA SHEET

#### AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 2 OF 3

ST IN MAINTENANCE PRODUCTS

: 09/13/86 ZEP ZD

SUPERSEDES: 09/07/86 PRODUCT NUMBER: 1791

SECTION III - HEALTH HAZARD DATA (CONTINUED)

CHRONIC EFFECTS OF OVEREXPOSURE:

THERE ARE NO KNOWN EFFECTS FROM CHRONIC EXPOSURE TO THIS PRODUCT.

NONE OF THE HAZARDOUS INGREDIENTS ARE LISTED AS CARCINOGENS BY TARC, NTP, & OSHA

EST'D PEL/YEV: NOT ESTABLISHED PRIMARY ROUTES OF ENTRY: 1NH.

HMIS CODES: HEALTH OFFLAM. 2: REACT. OFPERS, PROTECT. N/A/CHRONIC HAZ. NO

FIRST AID PROCEDURES:

SKIN : WASH CONTAMINATED SKIN THROUGHLY WITH SOAP OR A MILD DETERGENT. APPLY A

SKIN CREAM WITH LANDLIN. GET MEDICAL ATTENTION IF IRRITATION PERSISTS.

EYES : IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, OC-

CASIONALLY LIFTING UPPER AND LOWER LIDS. GET MEDICAL ATTENTION AT ONCE.

\*\*"HALE: MOVE EXPOSED PERSON TO PRESH AIR. IF IRRITATION PERSISTS,

GET MEDICAL ATTENTION PROMPILY.

INCEST: IF SWALLOWED, DO NOT INDUCE VOMITING. IF VOMITING OCCURS, KEEP HEAD

BELOW HIP LEVEL. GET EMERGENCY MEDICAL ATTENTION IMMEDIATELY.

SECTION IV - SPECIAL PROTECTION INFORMATION

PROTECTIVE CLOTHING : NO SPECIAL MEASURES ARE REQUIRED.

EYE PROTECTION : USE OF TIGHT FITTING SAFETY GLASSES OR GOGGLES IS STRON-

GLY RECOMMENDED, ESPECIALLY WHEN WEARING CONTACT LENSES.

RESPIRATORY PROTECTION: NO SPECIAL MEASURES ARE REQUIRED.

VENTILATION : NO SPECIAL MEASURES ARE REQUIRED.

SECTION V - PHYSICAL DATA

BOILING POINT (F) : 221F INITIAL SPECIFIC GRAVITY

: 1.08 PERCENT VOLATILE BY VOLUME (%) : 100%

(TCC )

VAPOR PRESSURE (MMHG): LOW EVAPORATION RATE(N/A =1): SLOW VAPOR DENSITY(AIR=1): N/D

PH(CONCENTRATE)
PH(USE DILUTION OF SOLUBILITY IN WATER : NEGLIGIBLE : N/A

): N/A

APPEARANCE AND ODOR : CLEAR, AMBER, LIGHT OIL HAVING STRONG, "JUICYFRUIT" FRAGRANCE

SECTION VI - FIRE AND EXPLOSION DATA

PEASH PRINT(F) (METHOD USED): 100F FLAMMABLE LIMITS LEL N/D UEL N/D

EXTINGUISHING MEDIA : CO2, FOAM, DRY CHEMICAL

SPECIAL FIRE FIGHTING: NONE UNUSUAL FIRE HAZARDS : NONE

Appendix33-000364

ZEP MANUFACTURING COMPANY

DATE

## NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.



By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

#### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen-Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS; Central Nervous System Depressant.

COR: Corrosive-Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Éstimated.

FBL: Flammable—At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation-A primary route of exposure through breathing of vapors (see below).

IRR: Irritant-Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable—Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value-A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time-weighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

#### **DISCLAIMER**

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.



# MATERIAL SAFETY DATA SHEET

#### AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 3 OF 3

ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS DATE

: 09/13/86 ZEP ZD

SUPERSEDES: 09/07/86 PRODUCT NUMBER: 1791

SECTION VII - REACTIVITY DATA

STABILITY

: STABLE

INCOMPATIBILITY(AVOID) : HEAT, OPEN FLAME, SPARK, AND OXIDIZING AGENTS

POLYMERIZATION

: WILL NOT OCCUR

HAZARBOUS DECOMPOSITION: CARBON DIOXIDE, CARBON MONOXIDE, AND OTHER UNIDENTIFIED

ORGANIC COMPOUNDS.

SECTION VIII - S P I L L A N D D I S P O S A L P R O C E D U R E S

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

IMMEDIATELY ELIMINATE ALL FLAME, IGNITION AND HIGH-HEAT SOURCES. ABSORB SPILL ON INERT ABSORBENT MATERIAL (eg ZEP-O-ZORB). PICK UP AND PLACE RESIDUE IN A CLEAN, D.O.T. SPECIFICATION CONTAINER FOR DISPOSAL. WASH AREA THOROUGHLY WITH A

DETERGENT SOLUTION AND RINSE WELL WITH WATER.

WASTE DISPOSAL METHOD:

LIQUIDS CANNOT BE SENT TO LANDFILLS UNLESS SOLIDIFIED. UNUSABLE PRODUCT AND COLLECTED, SPENT MATERIAL MAY REQUIRE DISPOSAL AS A HAZARDOUS WASTE AT A PERMIT-TED TREATMENT/STORAGE/DISPOSAL FACILITY. IN MOST STATES HAZARDOUS WASTE IN TOTAL AMOUNTS OF 220 LBS. OR LESS PER MONTH MAY BE DISPOSED OF IN A CHEMICAL OR INDUSTRIAL WASTE LANDFILL. CONSULT LOCAL, STATE, AND FEDERAL AGENCIES FOR PROPER DISPOSAL METHOD IN YOUR AREA.

RCRA HAZ. WASTE NOS.: DOO1

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN WHEN HANDLING AND STORING:

COMBUSTIBLE! STORE AND USE AWAY FROM HEAT, SPARKS, OPEN FLAME, OR ANY SOURCE OF 1GMITION.

STORE TIGHTLY CLOSED CONTAINER IN DRY AREA AT TEMPERATURES BETWEEN 40 AND 120 DEGREES F.

KERP PRODUCT OUT OF EYES.

KESP AWAY FROM FOOD AND FOOD PRODUCTS.

KEEP OUT OF THE REACH OF CHILDREN.

# SECTION X - TRANSPORTATION DATA

DOT PROPER SHIPPING NAME

DOT HAZARD CLASS: N/A

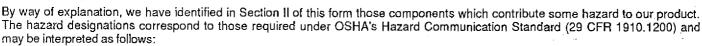
DOT LABEL/PLACARD: NONE T I.D. NUMBER : N/A

A TSCA CHEMICAL INVENTORY - ALL INGREDIENTS ARE LISTED

EPA CWA 40CFR PART 117 SUBSTANCE (RG IN A SINGLE CONTAINER): NONE

# NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.



# ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen—Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive-Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL: Flammable—At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation—A primary route of exposure through breathing of vapors (see below).

IRR: Irritant-Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable-Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value—A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic-The probable lethal dose for a 70 kg man is one cunce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the ESTD PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time-weighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

#### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.

Dear Customer: This Bulletin contains important environmental, health and texicology information for your amployees who recently ordered this product. Please make sure this information is given to them. If you resell this product, this Bullatin should be given to the Buyer. This Form may be reproduced without permission.

# **Material Safety Data Sheet**

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200). (Formerly Called MATERIAL INFORMATION BULLETIN)

antiwear gear compounds



CHEVRON NL Gear Compound 100

CPS 255052

#### TYPICAL COMPOSITION

Highly refined base oils (CAS 64742-54-7 and/or 64742-65-0, 64742-57-0, 72623-83-7, 64742-01-4, 72623-85-9 and 72623-87-1) Additives including foam inhibitors, pour depressant, and

>97%

<3%

# EXPOSURE STANDARD

No Federal OSHA exposure standard or ACGIH TLV has been established for this material. Based upon information reviewed to date, this product fits the definition for mineral oil mist. The applicable Federal OSHA exposure standard and ACGIH TLV (1985-86) for mineral oil mist is 5 mg/m<sup>3</sup>.

#### PHYSIOLOGICAL & HEALTH EFFECTS

#### EMERGENCY & FIRST AID PROCEDURES

# Eyes

Expected to cause no more than minor eye irritation.

Flush eyes immediately with fresh water for at least 15 minutes while holding the eyelids open. If irritation persists, see a doctor.

#### Skin

Expected to cause no more than minor skin irritation following prolonged OF frequently repeated contact.

Wash skin thoroughly with soap and water. Launder contaminated clothing.

#### Inhalation

Not expected to be acutely toxic inhalation. Breathing mineral oil mist at concentrations in air that exceed the recommended exposure standard can cause respiratory irritation or discomfort. See Additional Health Data.

If respiratory discomfort or irritation occurs, move the person to fresh air. See a doctor if discomfort or irritation continues.

#### Ingestion

Not expected to be acutely toxic ingestion.

by

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

RECEIVED

JAN 1 2 1987

X-IRC021 (07-85)

No. 369

Chevron Environmental Health Center, Inc., P.O. Box 4054, Richmond, CA 94804-0054 Emergency Phone Number (415) 233-3737

Rev. 4 09/25/86

#### ADDITIONAL HEALTH DATA

See following pages

#### SPECIAL PROTECTIVE INFORMATION

Eye Protection: No special eye protection is necessary.

**Skin Protection:** No special skin protection is necessary.

Respiratory Protection: No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standard, the use of an approved respirator is recommended.

Ventilation: Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

#### FIRE PROTECTION

Flash Point: (COC)>401°F(>205°C)

Autoignition Temp.: NDA Flammability Limits: n/a

Extinguishing Media: CO2, Dry Chemical,

Foam, Water Pog

Special Fire Fighting Procedures: For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus. See Hazardous Decomposition Products. Read the entire MSDS.

# SPECIAL PRECAUTIONS

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently.

CAUTION! Do not use pressure to empty drum or explosion may result.

#### ENVIRONMENTAL PROTECTION

Environmental Impact: This material is not expected to present any environmental problems other than those associated with oil spills.

Precautions if Material is Released OL Spilled: Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to further contamination of soil, water or groundwater. Clean up spills using appropriate techniques such as sorbent materials or pumping. and appropriate, contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

Waste Disposal Methods: Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

#### REACTIVITY DATA

Stability (Thermal, Light, etc.): Stable. Incompatibility (Materials to Avoid): May react with strong oxidizing materials. Hazardous Decomposition Products: Normal combustion forms carbon dioxide and water vapor and may produce oxides of sulfur, phosphorus and nitrogen; incomplete combustion can produce carbon monoxide. Hazardous Polymerization: Will not occur.

# PHYSICAL PROPERTIES

Solubility: Soluble in hydrocarbon solvents; insoluble in water.

Appearance (Color, Odor, etc.): Dark green
viscous liquid.

Boiling Point: n/a Melting Point: n/a

Specific Gravity: 0.88 @ 15.6/15.6°C

Vapor Pressure: n/a

Vapor Density (Air=1): n/a
Percent Volatile (Volume %): n/a

Evaporation: n/a

Viscosity: 93 cSt @ 40°C

n/a = Not Applicable
NDA = No Data Available

RECEIVED Chilosoph

The above information is based on data of which we are aware and is believed to be correct as of the date hereof. Since the information contained herein may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon the condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

No. 369

# **Material Safety Data Sheet**

CHEVRON NL Gear Compound 100

CPS 255052

# ADDITIONAL HEALTH DATA

Signs and symptoms of respiratory tract irritation may include, but may not be limited to, one or more of the following, depending on concentration and length of exposure: nasal discharge, sore throat, coughing, bronchitis, pulmonary edema and difficulty in breathing.

This product contains base oils which the International Agency for Research on Cancer (IARC) classifies as having no evidence of carcinogenic potential.

This product may contain petroleum base oils refined by a combination of severe hydrocracking and hydrotreating. The carcinogenic potential of paraffinic base oils prepared by this process is not specifically addressed by OSHA, NTP, or IARC. However, the process conditions, chemical analyses, and the results of Ames tests all support our opinion that these oils are not carcinogenic.



# MATERIAL SAFETY DATA SHEET

# AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 1 OF 3

30 - 40

10-20

< 5

ZEP MANUFACTURING COMPANY **3T IN MAINTENANCE PRODUCTS**  DATE

: 10/31/86

ZEP ZD MINT

SUPERSEDES: 10/01/85 PRODUCT NUMBER: 1792

SECTION I - EMERGENCY CONTACTS

ZEP MANUFACTURING COMPANY NON-OFFICE HOURS, WEEKENDS, AND HOLIDAYS: AREA CODE 404

P.O. BOX 2015 435-2973, 996-0899, 252-1587, 351-2952, 971-3367

ATLANTA, GEORGIA 30301 LOCAL POISON CONTROL CENTER .................

TRANSPORTATION EMERGENCY

BETWEEN 8:00A.M.-5:00P.M. CHEMTREC: TOLL FREE 1-800-424-9300 ALL CALLS RECORDED

(EASTERN TIME ZONE)

TELEPHONE (404)352-1680

DISTRICT OF COLUMBIA (202)483-7616 ALL CALLS RECORDED

500

CNS CBL

SECTION II - HAZARDOUS INGREDIENTS

TLV X IM EFFEC18 DESIGNATIONS (PPM) (SEE REVERSE) PROD.

\*\* DIMETHYL PHTHALATE \*\* phthalic acid, dimethyl 0.63 EIR ester: 1.2-benzemedicarboxulic acid, dimethul ester;

dmp; CAS# 131-11-3; RTECS# 1575000; USHA PEL-5 mc/m3.

\*\* LOW ODOR PARAFFINIC SOLVENT \*\* odorless base oil; dispersol; CAS# 64742-47-8; RTECS# NONE; OSHA PEL-

500 ppm. \*\* DIETHYL PHTHALATE \*\* ethyl phthalate: 1.2-Q. 55 EIR 5-10

benzenedicarboxylic acid, diethyl ester: CAS# 84-66-2

RTECS# TI1050000; OSHA PEL-N/D

\*\* DIPROPYLENE GLYCOL METHYL ETHER \*\* dipropylene 100 CBL.

r'ucol monomethul ether; CAS# 34590-94-8; RTECS#

₹ 1575000

SPECIAL NOTE: ADVERSE NEALTH EFFECTS WOULD NOT BE EXPECTED UNDER RECOMMENDED CONDITIONS OF USE SO LONG AS PRESCRIBED SAFETY PRECAUTIONS ARE PRACTICED.

SECTION III - HEALTH HAZARD DATA

ACUTE EFFECTS OF OVEREXPOSURE:

THE SOLVENTS IN THIS PRODUCT, WHEN INHALED OR ABSORBED IN HARMFUL GUANTITIES, MAY PRODUCE CENTRAL NERVOUS SYSTEM DEPRESSION CHARACTERIZED BY HEADACHE, NAUSEA, DIZZINESS AND STUPOR. VAPORS OR SPRAY MISTS MAY BE IRRITATING TO NASAL AND RESP-

ATORY TRACT, PRODUCT MAY BE IRRITATING TO SKIN AND EYES RESULTING IN REDNESS, TCHING OR BURNING. INTRODUCTION OF SOLVENTS, AS IN ASPIRATION OF VOMITUS FLUID. MAY PRODUCE CHEMICAL PNEUMONIA. EXISTING RESPIRATORY DISORDERS AND SKIN DISEASES MAY BE AGGRAVATED BY EXPOSURE.

### NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.



By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

# ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen—Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive-Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Éstimated.

FBL: Flammable-At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation-A primary route of exposure through breathing of vapors (see below).

IRR: Irritant-Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable-Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value-A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

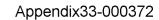
The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time-weighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

#### **DISCLAIMER**

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.





# MATERIAL SAFETY DATA SHEET

# AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 2 OF 3

REP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS

: 10/31/86 ZEP ZD MINT DATE

SUPERSEDES: 10/01/85 PRODUCT NUMBER: 1792

SECTION III - HEALTH HAZARD DATA (CONTINUED)

CHRONIC EFFECTS OF OVEREXPOSURE:

SKIN WHICH IS REPEATEDLY DEFATTED BY CONTACT WITH THIS PRODUCT MAY BE MORE SUSCEPTIBLE TO IRRITATION, INFECTION, OR DERMITITIS.

NONE OF THE INGREDIENTS ARE LISTED AS CARCINOGENS BY IARC, NTP, OR OSHA.

EST'D PEL/TLV: NOT ESTABLISHED PRIMARY ROUTES OF ENTRY: 1NH.

HMIS CODES: HEALTH 1; FLAM. 2; REACT. 0; PERS. PROTECT. N/A; CHRONIC HAZ. NO

FIRST AID PROCEDURES:

SKIN : WASH CONTAMINATED SKIN THROUGHLY WITH SOAP OR A MILD DETERGENT. APPLY A

SKIN CREAM WITH LANDLIN. GET MEDICAL ATTENTION IF IRRITATION PERSISTS. EYES : IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, OC-

CASIONALLY LIFTING UPPER AND LOWER LIDS. GET MEDICAL ATTENTION AT ONCE.

\*\*HALE: MOVE EXPOSED PERSON TO FRESH AIR. IF IRRITATION PERSISTS.

GET MEDICAL ATTENTION PROMPTLY.

INGEST: IF SWALLOWED, DO NOT INDUCE VOMITING. IF VOMITING OCCURS, KEEP HEAD

BELOW HIP LEVEL. GET EMERGENCY MEDICAL ATTENTION IMMEDIATELY.

SECTION IV - S P E C I A L P R O T E C T I O N I N F O R M A T I O N

PROTECTIVE CLOTHING : THE USE OF NEOPRENE, NITRILE OR NATURAL RUBBER GLOVES IS

STRONGLY RECOMMENDED, ESPECIALLY FOR PROLONGED CONTACT.

EYE PROTECTION : USE OF TIGHT-FITTING SAFETY GLASSES OR GOGGLES IS STRON-

GLY RECOMMENDED, ESPECIALLY WHEN WEARING CONTACT LENSES.

(TCC )

RESPIRATORY PROTECTION: IF VENTILATION IS INADEQUATE, WEAR A PROPERLY FITTING

MSA OR OSHA-APPROVED RESPIRATOR.

: VENTILATION SHOULD BE EQUIVALENT TO OUTDOORS. USE EX-**VENTILATION** 

HAUST FANG AND OPEN WINDOWS IN ENCLOSED SPACES.

SECTION V - PHYSICAL DATA

BOILING POINT (F) : 250-510F RANGE SPECIFIC GRAVITY : 0.99

PERCENT VOLATILE BY VOLUME (%) : 100% VAPOR PRESSURE (MMHG): N/D EVAPORATION RATE(BUOAC =1): <0.1

VAPOR DENSITY(AIR=1): N/D PH(CONCENTRATE) SOLUBILITY IN WATER : MEGLIGIBLE : N/A

PH(USE DILUTION OF ): N/A

APPEARANCE AND ODOR : DARK GREEN, CLEAR LIGUID WITH STRONG MINT FRAGRANCE

SECTION VI - FIRF AND EXPLOSION DATA

FLAMMABLE LIMITS LEI N/D UEL N/D

PEASH POINT(F) (METHOD USED): 127F

EXTINGUISHING MEDIA : CO2, FUAM, DRY CHEMICAL

SPECIAL FIRE FIGHTING: WEAR SELF-CONTAINED POSITIVE PRES. BREATHING APPARATUS.

UNUSUAL FIRE HAZARDS : NONE

# NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.



By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

# ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen—Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible-At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of

ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive-Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL: Flammable—At temperatures under 1000F, chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation—A primary route of exposure through breathing of vapors (see below).

IRR: Irritant-Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable—Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value-A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time-weighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safety if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

#### DISCLAIMER:

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.



# MATERIAL SAFETY DATA SHEET

# AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 3 OF 3

'ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS DATE

: 10/31/86 ZEP ZD MIN1

SUPERSEDES: 10/01/85 PRODUCT NUMBER: 1792

SECTION VII - REACTIVITY DATA

STABILITY

: STABLE

INCOMPATIBILITY (AVOID) : HEAT, OPEN FLAME, SPARK, AND OXIDIZING AGENTS

POLYMERIZATION : WILL NOT OCCUR

HAZARDOUS DECOMPOSITION: CARBON DIOXIDE, CARBON MONOXIDE, AND OTHER UNIDENTIFIED

ORGANIC COMPOUNDS.

SECTION VIII - SPILL AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: IMMEDIATELY ELIMINATE ALL FLAME, IGNITION AND HIGH-HEAT SOURCES. ABSORB SPILL ON INERT ABSORBENT MATERIAL (eg ZEP-O-ZORB). PICK UP AND PLACE RESIDUE IN A CLEAN, D. O. T. SPECIFICATION CONTAINER FOR DISPOSAL. WASH AREA THOROUGHLY WITH A DETERGENT SOLUTION AND RINGE WELL WITH WATER.

#### WASTE DISPOSAL METHOD:

LIQUIDS CANNOT BE SENT TO LANDFILLS UNLESS SOLIDIFIED. UNUSABLE PRODUCT AND COLLECTED, SPENT MATERIAL MAY REQUIRE DISPOSAL AS A HAZARDOUS WASTE AT A PERMIT-TED TREATMENT/STORAGE/DISPOSAL FACILITY. IN MOST STATES HAZARDOUS WASTE IN TOTAL AMOUNTS OF 220 LBS. OR LESS PER MONTH MAY BE DISPOSED OF IN A CHEMICAL OR INDUSTRIAL WASTE LANDFILL. CONSULT LOCAL, STATE, AND FEDERAL AGENCIES FOR PROPER DISPOSAL METHOD IN YOUR AREA.

RORA HAZ. WASTE NOS.: DOO1

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN WHEN HANDLING AND STORING:

COMBUSTIBLE! STORE AND USE AWAY FROM HEAT, SPARKS, OPEN FLAME, OR ANY SOURCE OF IGMITION.

STORE TIGHTLY CLOSED CONTAINER IN DRY AREA AT TEMPERATURES BETWEEN 40 AND 120 DEGREES F.

KERP PRODUCT OUT OF EYES.

DO NOT BREATHE SPRAY MISTS OR VAPORS.

CLOTHING OR SHOES WHICH BECOME CONTAMINATED WITH SUBSTANCE SHOULD BE REMOVED PROMPTLY AND NOT REWORN UNTIL THOROUGHLY CLEANED.

KEEP OUT OF THE REACH OF CHILDREN.

#### SECTION X - TRANSPORTATION PATA

DOT PROPER SHIPPING NAME

NONE

DOT HAZARD CLASS: N/A

T I.D. NUMBER : N/A DOT LABEL/PLACARD: NONE

EMA TSCA CHEMICAL INVENTORY - ALL INGREDIENTS ARE LISTED

EPA CWA 40CFR PART 117 SUBSTANCE(RG IN A SINGLE CONTAINER): NONE

Appendix33-000375

#### NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.



By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

# ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen-Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive-Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL: Flammable-At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation-A primary route of exposure through breathing of vapors (see below).

IRR: Irritant-Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable-Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value-A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time-weighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous." DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safety if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

#### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.





Division of The BOC Group, Inc.

575 Mountain Avenue Murray Hill New Jersey 07974 Telephone: 201-464-8100 TWX: 710-984-7970

# MATERIAL SAFETY DATA SHEET

Welding Consumables and Related Products Conforms to OSHA 1910.1200

#### IDENTIFICATION

PRODUCT NAME:

CHEMICAL FAMILY: Gas Mixture

SYNONYMS: Argon in CO2 Mixtures

DOT HAZARD CLASS: Nonflammable

gas

CAS NUMBER: Argon: 7440-37-1

Carbon Dioxide: 124-38-9

DOT IDENTIFICATION NUMBER: UN 1956

FORMULA: Ar: 15-75%

co<sup>2</sup>: 25-85%

CHEMTREC: 800-424-9300

# HEALTH HAZARD DATA

# TIME WEIGHTED AVERAGE EXPOSURE LIMIT:

No TWA/PEL established for mixture. Carbon dioxide has a TWA of 5,000 molar PPM. Its STEL is proposed to be changed from 15,000 molar PPM to 30,000 molar PPM (ACGIH, 1985-86). OSHA (1985) TWA for carbon dioxide = 5,000 molar PPM.

# SYMPTOMS OF EXPOSURE:

Concentrations of 20~30 percent of these mixtures when inhaled with adequate oxygen in the air will cause an increase in the respiratory rate. Higher concentrations will cause headache, nausea and eventual unconsciousness.

# TOXICOLOGICAL PROPERTIES:

Carbon dioxide is the most powerful vasodilator known. Inhaling large concentrations causes rapid circulatory insufficiency leading to come and death. Chronic harmful effects are not known from repeated inhalation of low (20-30%) concentrations of these mixtures.

# RECOMMENDED FIRST AID TREATMENT:

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO THESE MIXTURES. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS.

DATE OF ISSUE 11-1-86

Inhalation: Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, given mouth-to-mouth resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive.

Hazardous Mixtures of Other Liquids, Solids, or Gases:

None

PHYSICAL DATA

Boiling Point: N/A, Gas Mixture

Liquid Density @ Boiling Point: N/A, Gas Mixture

Vapor Pressure @ 70°F (21..1°C): N/A, Gas Mixture

Specific Gravity @ 70°F, 1 atm (Air=1): 1.40

Solubility in Water: Slightly

Freezing Point: N/A, Gas Mixture

Appearance and Odor: Colorless, and odorless gas.

FIRE/EXPLOSION HAZARDS DATA

Flash Point (Method Used): N/A

Auto Ignition Temperature: N/A

LEL: N/A UEL: N/A

Extinguishing Media: Nonflammable, inert gas

Electrical Classification: Nonhazardous

Special Fire Fighting Procedures: N/A

Unusual Fire and Explosion Hazards: N/A

REACTIVITY DATA

Stability: Stable

Incompatibility (Materials to Avoid): None

Hazardous Decomposition Products: None

Hazardous Polymerization: Will not occur

Conditions to Avoid: None

# SPILL OR LEAK PROCEDURES

# STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in container or container valve, contact CHEMTREC for emergency assistance or your closest Airco location.

# Waste Disposal Method:

Do not attempt to dispose of waste or unused quantities. Return in the shipping container properly labeled, and valve protection cap in place to Airco for proper disposal.

# SPECIAL PROTECTION INFORMATION

Respiratory Protection: Positive pressure air line with mask or self-contained breathing apparatus should be available for emergency use.

Ventilation: See Local Exhaust

Local Exhaust: To prevent accumulation of high concentrations so as to reduce the oxygen level in the air to less than 18 molar percent, and prevent accumulation above TWA for carbon dioxide.

Special: None

Mechanical (Gen.): None

Other: None

Protective Gloves: Any material

Eye Protection: Safety goggles or glasses

Other Protective Equipment: Safety shoes

#### SPECIAL PRECAUTIONS

# Special Labeling Information:

DOT Shipping Name: Compressed Gas, N.O.S.

DOT Hazard Class: Nonflammable gas

DOT Shipping Label: Nonflammable gas I.D. No.: UN 1956

# Special Handling Recommendations:

Use only in well-ventilated areas. Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connecting cylinder to low pressure (< 3,000 psig) piping or systems. Do not heat cylinder by any means to increase the discharge rate or product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.

For additional storage recommendations, consult Compressed Gas Association Pamphlets P-1.

# Special Storage Recommendations:

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 130°F (54°C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in-first out" inventory system to prevent full cylinders being stored for excessive periods of time.

For additional storage recommendations, consult Compressed Gas Association Pamphlets P-1.

# Special Packaging Recommendations:

These mixtures are noncorrosive and may be used with any common structural material.

## Other Recommendations or Precautions:

Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipment of a compressed gas cylinder which has not been filled by the owner or with his (written) consent is a violation of Federal Law (49CFR). Also see CGA Safety Bulletin SB-7.

11-86



Division of The BOC Group, Inc.

575 Mountain Avenue Murray Hill New Jersey 07974 Telephone: 201-464-8100 TWX: 710-984-7970

# MATERIAL SAFETY DATA SHEET

Welding Consumables and Related Products Conforms to OSHA 1910.1200

#### **IDENTIFICATION**

PRODUCT NAME:

CHEMICAL FAMILY: Gas Mixture

SYNONYMS: Argon in Helium Mixtures

DOT HAZARD CLASS: Nonflammable

gas

CAS NUMBER: Argon: 7440-37-1

Helium: 7440-59-7

DOT IDENTIFICATION NUMBER: UN 1956

FORMULA: Ar: 25-75%

He: 25-75%

CHEMTREC: 800-424-9300

# HEALTH HAZARD DATA

# TIME WEIGHTED AVERAGE EXPOSURE LIMIT:

No TWA is established. The gas mixtures are simple asphyxiants. Oxygen levels should be maintained at greater than 18 molar percent at normal atmospheric presure which is equivalent to a partial pressure of 135 mm Hg (ACGIH, 1985-86).

# SYMPTOMS OF EXPOSURE:

Effects of exposure to high concentrations so as to displace the oxygen in the air necessary for life are headache, dizziness, labored breathing and eventual unconsciousness.

# TOXICOLOGICAL PROPERTIES:

Mixtures are inactive biologically and essentially nontoxic; therefore, the major property is the exclusion of an adequate supply of oxygen to the lungs.

# RECOMMENDED FIRST AID TREATMENT:

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO THESE MIXTURES. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS.

DATE OF ISSUE 11-1-86

Inhalation: Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, given mouth-to-mouth resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive.

Hazardous Mixtures of Other Liquids, Solids, or Gases:

None

PHYSICAL DATA

Boiling Point: N/A, Gas Mixture

Liquid Density @ Boiling Point: N/A, Gas Mixture

Vapor Pressure: N/A, Gas Mixture

Specific Gravity @ 70°F, 1 atm (Air=1): 0.76

Solubility in Water: Slightly

Freezing Point: N/A, Gas Mixture

Appearance and Odor: Colorless, and odorless gas.

FIRE/EXPLOSION HAZARDS DATA

Flash Point (Method Used): N/A

Auto Ignition Temperature: N/A

LEL: N/A UEL: N/A

Extinguishing Media: Nonflammable, inert gas

Electrical Classification: Nonhazardous

Special Fire Fighting Procedures: N/A

Unusual Fire and Explosion Hazards: N/A

REACTIVITY DATA

Stability: Stable

Incompatibility (Materials to Avoid): None

Hazardous Decomposition Products: None

Hazardous Polymerization: Will not occur

Conditions to Avoid: None

### SPILL OR LEAK PROCEDURES

# STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in container or container valve, contact CHEMTREC for emergency assistance or your closest Airco location.

# Waste Disposal Method:

Do not attempt to dispose of waste or unused quantities. Return in the shipping container properly labeled, and valve protection cap in place to Airco for proper disposal.

# SPECIAL PROTECTION INFORMATION

Respiratory Protection: Positive pressure air line with mask or self-contained breathing apparatus should be available for emergency use.

Ventilation: See Local Exhaust

Local Exhaust: To prevent accumulation of high concentrations so as to reduce the oxygen level in the air to less than 18 molar percent.

Special: None

Mechanical (Gen.): None

Other: None

Protective Gloves: Any material

Eye Protection: Safety goggles or glasses

Other Protective Equipment: Safety shoes

# SPECIAL PRECAUTIONS

#### Special Labeling Information:

DOT Shipping Name: Compressed Gas, N.O.S.

DOT Hazard Class: Nonflammable gas

DOT Shipping Label: Nonflammable gas I.D. No.: UN 1956

# Special Handling Recommendations:

Use only in well-ventilated areas. Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connecting cylinder to low pressure ( $\leq 3,000$  psig) piping or systems. Do not heat cylinder by any means to increase the discharge rate or product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.

For additional storage recommendations, consult Compressed Gas Association Pamphlets P-1.

## Special Storage Recommendations:

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 130°F (54°C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in-first out" inventory system to prevent full cylinders being stored for excessive periods of time.

For additional storage recommendations, consult Compressed Gas Association Pamphlets P-1.

# Special Packaging Recommendations:

These mixtures are noncorrosive and may be used with any common structural material.

# Other Recommendations or Precautions:

Compressed gas cylinders should not be refilled except by qualified producers of a compressed gas. Shipment of a compressed gas cylinder which has not been filled by the owner or with his (written) consent is a violation of Federal Law (49CFR). Also see CGA Safety Bulletin SB-7.

11-86



Division of The BOC Group, Inc.

575 Mountain Avenue Murray Hill New Jersey 07974 Telephone: 201-464-8100 TWX: 710-984-7970

# MATERIAL SAFETY DATA SHEET

Welding Consumables and Related Products Conforms to OSHA 1910.1200

#### IDENTIFICATION

PRODUCT NAME:

#1, #2, #5

CHEMICAL FAMILY: Gas Mixture

SYNONYMS: Argon in Oxygen Mixtures

DOT HAZARD CLASS: Nonflaumable

gas

CAS NUMBER: Argon: 7440-37-1

Oxygen: 7782-44-7

DOT IDENTIFICATION NUMBER: UN 1956

FORMULA: Ar: 70-99%

02: 1-30%

CHEMTREC: 800-424-9300

# HEALTH HAZARD DATA

#### TIME WEIGHTED AVERAGE EXPOSURE LIMIT:

No TWA/PEL established. These mixtures when containing less than 18 molar % oxygen would act as simple asphyxiants at atmospheric pressure.

# SYMPTOMS OF EXPOSURE:

Effects of exposure to high concentrations so as to displace the oxygen in the air necessary for life are headache, dizziness, labored breathing and eventual unconsciousness.

# TOXICOLOGICAL PROPERTIES:

Mixtures with less than 18 molar % oxygen are inactive biologically and essentially nontoxic; therefore, the major property is the exclusion of an adequate supply of oxygen to the lungs.

# RECOMMENDED FIRST AID TREATMENT:

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO MIXTURES CONTAINING LESS THAN 18 MOLAR % OXYGEN. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS.

DATE OF ISSUE 11-1-86

Inhalation: Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, given mouth-to-mouth resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive.

Hazardous Mixtures of Other Liquids, Solids, or Gases:

None

PHYSICAL DATA

Boiling Point: N/A, Gas Mixture

Liquid Density @ Boiling Point: N/A, Gas Mixture

Vapor Pressure: N/A, Gas Mixture

Specific Gravity @ 70°F, 1 atm (Air=1): 1.0

Solubility in Water: Slightly

Freezing Point: N/A, Gas Mixture

Appearance and Odor: Colorless, and odorless gas.

FIRE/EXPLOSION HAZARDS DATA

Flash Point (Method Used): N/A

Auto Ignition Temperature: N/A

LEL: N/A UEL: N/A

Extinguishing Media: Nonflammable, inert gas

Electrical Classification: Nonhazardous

Special Fire Fighting Procedures: N/A

Unusual Fire and Explosion Hazards: N/A

REACTIVITY DATA

Stability: Stable

Incompatibility (Materials to Avoid): None

Hazardous Decomposition Products: None

Hazardous Polymerization: Will not occur

Conditions to Avoid: None

#### SPILL OR LEAK PROCEDURES

# STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in container or container valve, contact CHEMTREC for emergency assistance or your closest Airco location.

## Waste Disposal Method:

Do not attempt to dispose of waste or unused quantities. Return in the shipping container properly labeled, and valve protection cap in place to Airco for proper disposal.

# SPECIAL PROTECTION INFORMATION

Respiratory Protection: Positive pressure air line with mask or self-contained breathing apparatus should be available for emergency use.

Ventilation: See Local Exhaust

Local Exhaust: To prevent accumulation of high concentrations so as to reduce the oxygen level in the air to less than 18 molar percent.

Special: None

Mechanical (Gen.): None

Other: None

Protective Gloves: Any material

Eye Protection: Safety goggles or glasses

Other Protective Equipment: Safety shoes

#### SPECIAL PRECAUTIONS

# Special Labeling Information:

DOT Shipping Name: Compressed Gas, N.O.S.

DOT Hazard Class: Nonflammable gas

DOT Shipping Label: Nonflaumable gas I.D. No.: UN 1956

#### Special Handling Recommendations:

Use only in well-ventilated areas. Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connecting cylinder to low pressure (<3,000 psig) piping or systems. Do not heat cylinder by any means to increase the discharge rate or product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.

For additional storage recommendations, consult Compressed Gas Association Pamphlets P-1.

# Special Storage Recommendations:

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 130°F (54°C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in-first out" inventory system to prevent full cylinders being stored for excessive periods of time.

For additional storage recommendations, consult Compressed Gas Association Pamphlets P-1.

### Special Packaging Recommendations:

These mixtures are noncorrosive and may be used with any common structural material.

# Other Recommendations or Precautions:

Compressed gas cylinders should not be refilled except by qualified producers of a compressed gas. Shipment of a compressed gas cylinder which has not been filled by the owner or with his (written) consent is a violation of Federal Law (49CFR). Also see CGA Safety Bulletin SB-7.

11-86



Division of The BOC Group, Inc.

575 Mountain Avenue Murray Hill New Jersey 07974 Telephone: 201-464-8100 TWX: 710-984-7970

# MATERIAL SAFETY DATA SHEET

Welding Consumables and Related Products Conforms to OSHA 1910.1200

# IDENTIFICATION

PRODUCT NAME:

CHEMICAL FAMILY: Alkyne

SYNONYMS: Ethyne

DOT HAZARD CLASS: Flammable gas

CAS NUMBER: 74-86-2

DOT IDENTIFICATION NUMBER: 1001

FORMULA: C2H2

CHEMTREC: 800-424-9300

#### HEALTH HAZARD DATA

# TIME WEIGHTED AVERAGE EXPOSURE LIMIT:

Acetylene is defined as a simple asphyxiant. Oxygen levels should be maintained at greater than 18 molar percent at normal atmospheric pressure which is equivalent to a partial pressure of 135 mm Hg. (ACGIH, 1984-85), no OSHA PEL.

ACETONE: 67-64-1

Acetylene is shipped dissolved in acetone, which comprises approximately 40% of the cylinder weight. Acetone may discharge and burn along with acetylene if the cylinder is stored on its side.

OSHA PEL: 1,000 PPM, ACGIH-TLV: 750 PPM, 1000 PPM (STEL)

#### SYMPTOMS OF EXPOSURE:

Inhalation: Low concentrations (10-20% in air) cause symptoms similar to that of being intoxicated. Bigher concentrations so as to exclude an adequate supply of oxygen to the lungs cause unconsciousness.

## TOXICOLOGICAL PROPERTIES:

As a narcotic gas or intoxicant causes hypercapnia (an excessive amount of carbon dioxide in the blood). Repeated exposures to tolerable levels has not shown deleterious effects. The major property is the exclusion of an adequate supply of oxygen to the lungs.

DATE OF ISSUE 11/1/86 SUPERSEDES ALL PREVIOUS ISSUES

# RECOMMENDED FIRST AID TREATMENT:

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO ACETYLENE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS AND BE COGNIZANT OF EXTREME FIRE AND EXPLOSION HAZARD.

Inhalation: Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, given mouth-to-mouth resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive.

# Hazardous Mixtures of Other Liquids, Solids, or Gases:

Flammable over an extremely wide range in air. Explosive reactions may occur on ignition. Reacts explosively with halogens and halogenated compounds.

# PHYSICAL DATA

Boiling Point: Sublimation Point = -118.8°F (-83.8°C)

Liquid Density @ Boiling Point: @ -116°F (-82°C) = 38.8 lb/ft<sup>3</sup> (622 kg/m<sup>3</sup>)

Vapor Pressure @ 70°F (21.1°C): 645 psia (4450 kPa)

Specific Gravity @ 70°F, 1 atm (Air=1): @ 68°F (20°C) = 0.906

Solubility in Water: Soluble

Freezing Point: -113°F (-80.6°C)

Appearance and Odor: Pure acetylene is a colorless gas with an ethereal odor. Commercial (carbide) acetylene has a distinctive garlic-like odor.

#### FIRE/EXPLOSION HAZARDS DATA

Flash Point (Method Used): Gas

Auto Ignition Temperature: 565°F (296°C)

LEL: 2.2 UEL: 80-85\*

Extinguishing Media: Carbon dioxide; dry chemical

Electrical Classification: Class 1, Group A

Special Fire Fighting Procedures: If possible, stop flow of escaping gas. Use water spray to cool surrounding containers. Keep personnel away since heated or burning cylinders can rupture violently.

Unusual Fire and Explosion Hazards: GASEOUS ACETYLENE IS SPONTANEOUSLY COMBUSTIBLE IN AIR AT PRESSURES ABOVE 15 PSI (207 kPa). It requires a very low ignition energy so that fires which have been extinguished without stopping the flow of gas can easily reignite with possible explosive force. Acetylene has a density very similar to that of air so when leaking it does not readily dissipate.

\* Pure acetylene can ignite by decomposition above 15 psi (207 kPa); therefore, the UEL is 100% if the ignition source is of sufficient intensity.

#### REACTIVITY DATA

Stability: Unstable

Incompatibility (Materials to Avoid): Oxygen and other oxidizers including all of the halogens and halogen compounds. Forms explosive acetylide compounds with copper, mercury, silver, brasses containing more than 66% copper and brazing materials containing silver or copper.

Hazardous Decomposition Products: Carbon monoxide and hydrogen

Hazardous Polymerization: Will not occur

Conditions to Avoid: Do not allow the free gas (outside of cylinder) to exceed 15 psi. Cylinders should not be exposed to sudden shock or sources of heat.

#### SPILL OR LEAK PROCEDURES

# STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is in container or container valve, contact CHEMTREC for emergency assistance or your closest Airco location.

# Waste Disposal Method:

Do not attempt to dispose of waste or unused quantities. Return in the shipping container properly labeled and valve protection cap in place to Airco for proper disposal.

#### SPECIAL PROTECTION INFORMATION

Respiratory Protection: Positive pressure air line with mask or self-contained breathing apparatus should be available for emergency use.

Ventilation: Hood with forced ventilation.

Local Exhaust: To prevent accumulation above the LEL.

Special: N/A

Mechanical (Gen.): In accordance with electrical codes.

Other: N/A

Protective Gloves: PVC or rubber in laboratory; as required for cutting & welding.

Eye Protection: Safety goggles or glasses

Other Protective Equipment: Safety shoes, safety shower

## SPECIAL PRECAUTIONS

# Special Labeling Information:

DOT Shipping Name: Acetylene DOT Hazard Class: Flammable gas

DOT Shipping Label: Flammable gas I.D. No.: UN 1001

# Special Handling Recommendations:

Use only in well-ventilated areas. Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when removing gas from the cylinder. DO NOT ALLOW THE FREE GAS TO EXCEED 15 PSI (207 kPA) @ 70°F (21.1°C). Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.

For additional recommendations, consult Compressed Gas Association's Pamphlets G-1 and P-1. NFPA #51-1984. OSHA 1910 - Subparts # & Q

# Special Storage Recommendations:

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area of noncombustible construction way from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 130F (54C). Cylinders must be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in-first out" inventory system to prevent full cylinders being stored for excessive periods of time. Post "No Smoking or Open Flames" signs in the storage or use area. There should be no sources of ignition in the storage or use area.

For additional recommendations, consult Compressed Gas Association's Pamphlets G-1& P-1. NFPA #51-1984. OSHA 1910 - Subparts H & Q

# Special Packaging Recommendations:

Since acetylene will explode or combust if its pressure exceeds 15 psi (207 kPa), it is shipped dissolved in acetone or dimethylformamide, which is dispersed in a porous mass within the cylinder. Follow Airco's instructions for the maximum withdrawal rate for each size cylinder so that solvent is not withdrawn with the acetylene.

Most metals except silver, copper, mercury or brasses with more than 66% copper are compatible (noncorrosive) with acetylene.

#### Other Recommendations or Precautions:

Earth-ground and bond all lines and equipment associated with the acetylene system. Electrical equipment should be nonsparking or explosion proof. Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipments of a compressed gas cylinder, which has not been filled by the owner or with his (written) consent, is a violation of Federal Law (49CFR).

11-88



# DIAMOND CHAIN COMPANY MATERIAL SAFETY DATA SHEET

PTFE Impregnated Lithium grease (applied to 0-ring roller chain products and furnished in packets with 0-ring connecting links.)

SEC	rion i
WALFACTURER'S NAME Diamond Chain Company Division of AMSTED Inc	LUSTRIES 317-638-6431
P.O. Box 7045, Indianapolis, IN 46207	
HEHICAL HAVE AND SYNONYILS	TRADE NAME AND SYNCHMIS Diamond Supply Spec. 100.7.23
HIMICAL FAMILY Primarily Petroleum Hydrocarbons	See below

SECTION II - INGR	EDIENTS
CONSTITUENTS	CAS REGISTRY NO. %
Lithium 12-Rydroxy Stearate	7620-77-1
Zinc Oxide	60911-87-6
r <sup>Md</sup> neral Oil	64741-89-5
talcium Soap	64754-97-8
Polytetrafluoroethylene (PTFE)	9002-84-0
·	

SECTION III — PHYSICAL DATA							
550°F	SPECIFIC GRAVITY (H20=1)	0.91-0.94					
0.01	PERCENT VOLATILE BY VOLUME C	Nil Nil					
5	EVAPORATION RATE(*	0.01					
Insoluble	* - n-Butvl Acetate	. Some					
	550°F 0.01mm 5	550°F SPECIFIC GRAVITY (H2D=1)  0.01mm PERCENT VOLATILE BY VOLUME (					

APPEARANCE AND UDUR Yellowish grease with mineral oil odor.

SECTION	IV -	FIRE	AND	EXPLOSION	HAZARD	DATA
CASH POINT CHETHER USERS				FLANMALE LINETS	1%	d tert
Foam, dry chemical, run run from from from from from from from from	ES					
NUSUAL FIRE AND EXPLOSION HA	ZARDS					

# HEALTH HAZARD DATA SECTION mg/m3 for o for oil mist in air. (PTFE not harmful below 500°F) CTS OF DVEREXPOSURE ay cause eye and skin irritation. Avoid prolonged or repeated skin contact. recaution exposure to liquids, vapors, mists and fumes should be minimized. ow order of acute oral toxicity. IGENCY AND FIRST AID PROCEDURES Flush with clear water for 15 minutes or until irritation subsides. Consult ive contact: <u>loctor if irritation persists. Inhalation: Remove from exposure into fresh air. If</u> vercome by vapor, call physician immediately. Ingestion: Call physician immediately. SECTION REACTIVITY DATA BILITY CONDITIONS TO AVOID UNSTABLE Х Avoid smoking cigarettes or cigars contaminated with grease. STABLE May cause nausea and/or flu-like symptoms. ARBOUS BECOMPOSITION PRODUCTS None COMBITIONS TO AVUID MAY DCCUR HAZARDOUS POLYMERIZATION Avoid contact with strong oxidants like liquid chlorine VILL NOT DCCUR or concentrated oxygen. SPILL SECTION OR LEAK PROCEDURES EPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Scrape up grease and clean remainder with petroleum solvents. DONTAN JAZORZIO STZI Dispose per applicable local, state and federal regulations at an approved waste disposal facility. SPECIAL PROTECTION INFORMATION SECTION VIII ESPHATORY PROTECTION CSPECIFY TYPE> Normally not needed unless heated above 500°F TIPESCETTE SPECIAL LDCAL EXHAUST ANDHO HEA Use to capture fumes and vapors VENTILATION MECHANICAL (GENERAL) DTHER arel us von Oil resista Chance eve contact, wear goggles. EYE PROTECTION resistant gloves, if needed THER PROTECTIVE EQUIPMENT SPECIAL PRECAUTIONS SECTION IX RECAUTIONS TO ME TAKEN IN MANDLING AND STORING Keep enclosed when not in use. Do not handle or store near heat, sparks, flame or strong oxidants. THER PRECAUTIONS Avoid breathing oil mist or fumes. Use adequate ventilation. Remove oil-soaked clothing

and launder before reuse. Cleanse skin thoroughly after contact.

NOTE:

Grinding roller chain pins for disassembly may produce sufficient

heat for release of nauseous fumes. Provide adequate ventilation.

Appendix33-000394

FORM REVISION DATE OF 184 OF

7000 F-0585-E



# MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 1 OF 3

*ZEP MANUFACTURING COMPANY 1ST IN MAINTENANCE PRODUCTS*  DATE : 01/10/87 SUPERSEDES: 11/84

PRODUCT NUMBER: 0623

SECTION I - EMERGENCY CONTACTS

ZEP MANUFACTURING COMPANY NON-OFFICE HOURS, WEEKENDS, AND HOLIDAYS! AREA CODE 404 P.O. BOX 2015

ATLANTA, GEORGIA 30301 TELEPHONE (404)352-1680

(EASTERN TIME ZONE)

435-2973, 996-0899, 252-1587, 351-2952, 971-3367 LOCAL POISON CONTROL CENTER ......

TRANSPORTATION EMERGENCY

BETWEEN 8:00A.M.-5:00P.M. CHEMTREC: TOLL FREE 1-800-424-9300 ALL CALLS RECORDED DISTRICT OF COLUMBIA (202)483-7616 ALL CALLS RECORDED

SECTION II - HAZARDOUS INGREDIENTS

DESIGNATIONS

\*\* MINERAL SPIRITS \*\* LIGROIN; ALIPHATIC NAPHTHA; CAS# 64741-41-9; RTECS# SE7555000; OSHA PEL 500 PPM

TLV. EFFECTS % IN (PPM) (SEE REVERSE) PROD.

> CNS CBL N/D

SPECIAL NOTE: ADVERSE HEALTH EFFECTS WOULD NOT BE EXPECTED UNDER RECOMMENDED CONDITIONS OF USE SO LONG AS PRESCRIBED SAFETY PRECAUTIONS ARE PRACTICED.

SECTION III - H E A L T H HAZARD DATA

ACUTE EFFECTS OF OVEREXPOSURE:

OVER-EXPOSURE TO THE VAPORS FROM THIS PRODUCT MAY PRODUCE MUCOUS MEMBRANE IRR-ITATION, PARTICULARLY OF THE EYE AND RESPIRATORY TRACT. OVER-EXPOSURE TO VAPORS MAY ALSO PRODUCE MILD CENTRAL NERVOUS SYSTEM DEPRESSION CHARACTERIZED BY HEAD-THE, DIZZINESS, NAUSEA, AND STUPOR, LEADING TO UNCONSCIOUSNESS IN EXTREME wases. Introduction of solvents, as in aspiration of vomitus fluid, may produce CHEMICAL PNEUMONIA. EXISTING RESPIRATORY DISORDERS AND LUNG DISEASES MAY BE AG-GRAVATED BY INHALATION OF VAPORS.

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material. Safety Data Sheets for this product so that your files remain up-to-date.



But the late of the second

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

# ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists. 40 ( ... 4.1 km ... 1904)

Confidence of Mark

CAR: Carcinogen-Considered a potential or confirmed cancer causing agent by either the National Texicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible-At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive-Causes irreversible afterations in living tissue (e.g. burns).

Est'd: Éstimated.

Est'd: Estimated.
FBL: Flammable—At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxio-The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation-A primary route of exposure through breathing of vapors (see below).

IRR: Irritant-Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable—Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit-The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value-A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above,

TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This timeweighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry-this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalizedsystemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other-sources of ignition; they may explode and cause injury or death... Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an anylronmentally sate manner and in accordance with government regulations. "Empty" containers should never be redised unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company of you have any questions.

# CARLES AREA DECEMBER OF THE THE CLAIMER HT FOR SECOND SET OF BAURONXB-ABVB

All statements, technical information and recommendations centained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or heriding of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the office and the outline Address the collection of product's label and Material Safety Data Sheet.



AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 2 OF 3

ZEP MANUFACTURING COMPANY 'ST IN MAINTENANCE PRODUCTS DATE : 01/10/87

SUPERSEDES: 11/84 PRODUCT NUMBER: 0623

SECTION III - HEALTH HAZARD DATA (CONTINUED)

CHRONIC EFFECTS OF OVEREXPOSURE:

REPEATED OR PROLONGED INHALATION EXPOSURE MAY PRODUCE REVERSIBLE LUNG DAMAGE. SKIN WHICH IS REPEATEDLY DEFATTED BY CONTACT WITH SOLVENTS MAY BE MORE SUSEP-TIBLE TO IRRITATION, INFECTION, AND DERMITITIS.

NONE OF THE INGREDIENTS ARE LISTED AS CARCINOGENS BY IARC, NTP, OR OSHA.

EST'D PEL/TLV: NOT ESTABLISHED PRIMARY ROUTES OF ENTRY: INH.

HMIS CODES: HEALTH 1:FLAM, 1:REACT. O:PERS. PROTECT. B :CHRONIC HAZ. YES

FIRST AID PROCEDURES:

SKIN : WASH CONTAMINATED SKIN THROUGHLY WITH SOAP OR A MILD DETERGENT. APPLY A SKIN CREAM WITH LANGLIN. GET MEDICAL ATTENTION IF IRRITATION PERSISTS.

: IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, OC-EYES CASIONALLY LIFTING UPPER AND LOWER LIDS. GET MEDICAL ATTENTION AT ONCE.

'NHALE: MOVE EXPOSED PERSON TO FRESH AIR. IF IRRITATION PERSISTS,

GET MEDICAL ATTENTION PROMPTLY.

INGEST: IF THIS PRODUCT IS SWALLOWED, DO NOT INDUCE VOMITING. IF VICTIM IS

CONSCIOUS GIVE PLENTY OF WATER TO DRINK. GET MEDICAL ATTENTION AT ONCE.

SECTION IV - SPECIAL PROTECTION INFORMATION

PROTECTIVE CLOTHING : WEAR NEOPRENE, NITRILE, OR NATURAL RUBBER GLOVES OR

GLOVES WITH PROVEN RESISTANCE TO THE INGREDIENTS LISTED.

EYE PROTECTION

: WEAR TIGHT-FITTING SPLASH-PROOF SAFETY GLASSES

ESPECIALLY IF CONTACT LENSES ARE WORN.

RESPIRATORY PROTECTION: IF VENTILATION IS INADEQUATE, WEAR A PROPERLY FITTING

MSA OR OSHA-APPROVED RESPIRATOR.

VENTILATION

: VENTILATION SHOULD BE EQUIVALENT TO OUTDOORS. USE EX-

HAUST FANS AND OPEN WINDOWS IN ENCLOSED SPACES.

SECTION V - PHYSICAL DATA

BOILING POINT (F) : > 200

SPECIFIC GRAVITY PERCENT VOLATILE BY VOLUME (%) : 1.340

VAPOR PRESSURE(MMHG): N/D VAPOR DENSITY(AIR=1): N/D

EVAPORATION RATE(

\* N/D =1): N/D

: 6 - 7

SOLUBILITY IN WATER : SOLUBLE

PH(CONCENTRATE)

PH(USE DILUTION OF

): N/A

APPEARANCE AND ODOR : OPAQUE ORANGE-BROWN EMULSION WITH NO ODOR.

SECTION VI - FIRE AND EXPLOSION DATA

←LASH POINT(F) (METHOD USED): ^200F

(TOC )

FLAMMABLE LIMITS LEL N/D

UEL N/D

EXTINGUISHING MEDIA : CO2, DRY CHEMICAL, FOAM

SPECIAL FIRE FIGHTING: WEAR SELF-CONTAINED POSITIVE PRES. BREATHING APPARATUS. UNUSUAL FIRE HAZARDS : FIRE EXPOSED DRUMS SHOULD BE COOLED WITH STREAM OF WATER.



L Caracimitación. Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.



By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen-Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible-At temperatures between 100°F, and 200°F,, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive-Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL: Flammable-At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic—The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion—A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation-A primary route of exposure through breathing of yapors (see below):

N/A: Not Applicable—Category is not appropriate for this product.

N/D: Not Determined—Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration in Line 11 List 11 List 10 Mais HELV mais HOLV mais HOLV mais HOLV.

PEL: Permissible Exposure Limit-The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer—Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value-A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above. The probable lethal dose for a 70 kg man is one counce or more; As the control of the control

The health and physical data contained in various sections of this form-concern the overall hazards of the product. Please note that the ESTD PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time weighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 flours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry-this item indicates the way or ways one or more hazardous fingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury on death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions. DE CONTROL CONDISCLAIMER SUBMENT DESANT DESANT MESSANTER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which to be a statement of the statements of the statement of the statemen we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use of handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the Many of Marchaller of the end of the end of the end of the control product's label and Material Safety Data Sheet.

TO A FOR THOSE FOR A SECOND BUTTOON FREEDOM FOR A MASH FREEDOM SECOND SECOND FOR A SECOND SEC 的现在分词 "我们是在这个人的人,我们就是这个的<mark>是一切</mark>的是是不是,我们<mark>是我们的,我们的说法,我们的说法是是一个,我们的</mark>是是一个,我们的人们的,我们就是这样的



AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 3 OF 3

ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS DATE : 01/10/87

SUPERSEDES: 11/84

PRODUCT NUMBER: 0623

SECTION VII - REACTIVITY DATA

STABILITY

: STABLE

INCOMPATIBILITY (AVOID) : NONE

POLYMERIZATION

: WILL NOT OCCUR

HAZARDOUS DECOMPOSITION: CARBON DIOXIDE, CARBON MONOXIDE, AND OTHER UNIDENTIFIED

ORGANIC COMPOUNDS.

DISPOSAL PROCEDURES SECTION VIII - SPILL AND

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: IMMEDIATELY ELIMINATE ALL FLAME, IGNITION AND HIGH-HEAT SOURCES. ABSORB SPILL ON INERT ABSORBENT MATERIAL (EG ZEP-O-ZORB). PICK UP AND PLACE RESIDUE IN A CLEAN, D.O.T. SPECIFICATION CONTAINER FOR DISPOSAL. WASH AREA THOROUGHLY WITH A DETERGENT SOLUTION AND RINSE WELL WITH WATER.

#### WASTE DISPOSAL METHOD:

LIQUIDS CANNOT BE SENT TO LANDFILLS UNLESS SOLIDIFIED. UNUSABLE PRODUCT AND COLLECTED, SPENT MATERIAL MAY REQUIRE DISPOSAL AS A HAZARDOUS WASTE AT A PERMIT-TED TREATMENT/STORAGE/DISPOSAL FACILITY. IN MOST STATES HAZARDOUS WASTE IN TOTAL AMOUNTS OF 220 LBS. OR LESS PER MONTH MAY BE DISPOSED OF IN A CHEMICAL OR INDUSTRIAL WASTE LANDFILL. CONSULT LOCAL, STATE, AND FEDERAL AGENCIES FOR PROPER DISPOSAL METHOD IN YOUR AREA.

RCRA HAZ. WASTE NOS.: N/A

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN WHEN HANDLING AND STORING: STORE TIGHTLY CLOSED CONTAINER IN DRY AREA AT TEMPERATURES BETWEEN 40 AND 120 DEGREES F.

KEEP PRODUCT AWAY FROM SKIN AND EYES.

DO NOT BREATHE SPRAY MISTS OR VAPORS.

CLOTHING OR SHOES WHICH BECOME CONTAMINATED WITH SUBSTANCE SHOULD BE REMOVED PROMPTLY AND NOT REWORN UNTIL THOROUGHLY CLEANED.

KEEP OUT OF THE REACH OF CHILDREN.

SECTIONX - TRANSPORTATION DATA

DOT PROPER SHIPPING NAME

NONE

DOT HAZARD CLASS: N/A

DOT LABEL/PLACARD: NONE TI.D. NUMBER : N/A

PA TSCA CHEMICAL INVENTORY - ALL INGREDIENTS ARE LISTED

EPA CWA 40CFR PART 117 SUBSTANCE(RQ IN A SINGLE CONTAINER): NONE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.



STEPS OF THE STATE 
By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

## ABBREVIATIONS USED IN THE MSDS:

CAR: Carcinogen–Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible–At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite it a source of

ignition is present.

CNS: Central Nervous System Depressant, Fig. 200 to AAA-Hazi and AAA-Hazi AAA-Hazia and to AaA-Hazi AAA-Hazia

COR: Corrosive—Causes interestible alterations in living tissue (eighburns) with a British of the British of th

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.
FBL: Flammable-At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation-A primary route of exposure through breathing of vapors (see below).

IRR: Irritant, Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable—Category is not appropriate for this product.
N/D: Not Determined—Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health? A STAR TO A CHARGE ON SECTION SECTION OF STAR AND A STAR AN QSHAL Occupational Safety and Health Administration: AN I HOUSE PLATE SALE FOR TOWN AND A FOLLOWING LIGHTOT

PEL: Permissible Exposure Limit, The time-weighted-average exposure value, established by OSHA for repeated exposure during [1/4] any 8 hours per day, 5 days per week, without adverse effects. 1. (1994年) 20日 7. (11. (15)1011日) 1. (16)1日(16)1月(16)1日) 18年間的資金

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value-A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time 3/4 - 3/4 weighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Raints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized. systemic or specific-organ toxic effect. MO STEIM VANUE BHTABME TOM OU

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of emptied containers. "Empty" containers retain residue (liquid and/or vapor) and dan be dangerous) DO NOT pressurae cur, weld; braze, solder, drillip. இர grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death and cause injury or death Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and Data the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions. 海路 结正为此,阿州在村内,有是一切。他们的

#### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which required to the statements of the statement of the we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use of handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product slabel and Material Safety Data Sheet.

#### laterial Safety Data Sheet ay be used to comply with SHA's Hazard Communication Standard, a.CFR 1910.1200. Standard must be

Pacropyon locally)

U.S. Department of Labor Occupational Safety and Health Administration (Non-Mandatory Form) Form Approved OMB No. 1218-0072



used for specific requirements.	OMB No. 1218-0072  Note: Stank spaces are not permitted. If any term is not applicable, or no information is evaluable, the space must be marked to indicate that					
ection				<b>・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・</b>	unama ja Dili Salah s	
munque's Name Tydrotex, Inc.		Chergansy Telephone Mather				
ddress (Murroer, Street, City, State, and ZIP Code) P.O. Box 560707		(214) 638-7400 Telephone Municipi for Information (214) 638-7400				
Dallas, Texas 75356-0707		One Property 3-17-87				
		Signaire of Property (options)				
lection II — Hazardous Ingredients/Iden	itity information			COMMENT STANDARD CONTRACTOR OF THE STANDARD CONT		
lezardous Componerss (Specific Chemical Identity:	Common Name(s))	OSHA MEL	ACCION TLV	Other Limits Recommended		
NONE				And the state of t	•	
			<del></del>	a de la companya del companya del companya de la co		
	<del></del>	:	<u> </u>	And the state of t		
				The state of the s		
<u> </u>				and the second s	state of the	
and the second of the second o	and the second of the second	aget a grant but	Harris Company		-	
				<u> </u>		
	· · · · · · · · · · · · · · · · · · ·			The state of the s		
	···			manufold degraphy particles who is a process of the control of		
		· .		and the state of t		
			<u> </u>			
		-	· · · · · · · · · · · · · · · · · · ·	SAN THE SAN TH		
			The second secon	- X - 10, - 100pp		
Section III - Physical/Chemical Charac	teristics		A Control of the Cont	godina Compression (1998)		
String Port	600°F	Specific Gravity	(HgO = 1)	acidado e esta en 1900 e en 19 El composições de la		
Control Control (cont. 1967)	N/A	Meang Point	and the state of t	•		
	gradual of configuration the first con-	Every Academ				
the second secon						
		and the second		4.4.25		

CHINA 174, 8-01 1985

· .	######################################	and the second s	hand the state of	the order of the second		And the state of the state of
Section V —	Reactivity Data	3		A. A. I II. III. III. III. III. III. II	manufacture offices, with the god flow tomorrowing at a tomorrow of the 20 Standard School at god of 3-22 School at	Africa code processor for Brown, successor
Stability	Unstable	1	Conditions to Avoid	Open Marine	o forth formulation in Agent, corone Actival II Entermy (Total Testion in Marie Standsburger) (1975) 1976 (1976) in 1996) in 1996 (1996)	The state of the s
<del>fine</del>	Stable	X	The state of the s	The second secon	The second secon	ي به ايني المستقدمة الله الله الله
ricompatibility	(Materials to Aveis)	· · · · · · · · · · · · · · · · · · ·	Strong Oxidant	8	neste a protesta de la companya del companya del companya de la co	The state of the second
faza-dous Deco	imposition or Byprod	ucts	Oxides of Nitr	ogen and Carbon.	nder gegen gest filet beland vom meg endhaft filet blede in han eine men men men film in der der der der der d	of the Control of the
eazardous Polymentation	May Occur		Conditions to Avoid	Rone	ia tanàny a distrika any no magazatama kagilanya dan di manganaka any na sang ang ang ang ang ang ang ang ang	et execus
	Will Not Occur	X	***		enter la	n Deres
Section VI -	- Health Hazard	Data			en de la composition della com	11 (1.81),4300
Routers) of Entin	y Inh	alation?		Skip?	ingestion?	e e e e
Health Hazards	(Acute and Chronic)			. 0	· ·	ı
ACITE F	yes-Irritati	on I	ngestion-Catha	rtic Effect	The state of the s	1
CHRONIC:		·	Dermatitis		According to the second	
Carcinogenicity	NI			IARC Monographs?	OSHA Regulate	y to the
					A K N P	* 4
Signs and Symp	ptoms of Exposure		· · · · · · · · · · · · · · · · · · ·	<u> </u>	The second secon	
CER HEAT	LTH HAZARDS A	BOVE.			The state of the s	· . · your, c
Medical Condu	ons		<del></del>			
	valed by Exposure				and the second s	
UNKNOWN	First Aid Procedure	5 Eyes	Plush with la	rge amounts of water	- It irritates	:
indica l	artention.	Ingesti	lon-If cathart	ic effect persists, p and water. It irri	seek medica:	recovery the de-
<u>attenti</u>	on				George Control of the	• 4
	Precautions  ken in Case Material		e Handling and U	se	MATERIAL CONTRACTOR AND A STATE OF THE STATE	
					BPMAJAC MATERIAL	
				e container. Absorb	- Andrews	r y å.√. - · · · · · · · · · · · · · · · · · · ·
90000 U	acqaib bus q	e in a	ccordance with	all applicable Fede	·····································	+ + 7 X <b>3 © 1%</b>
<b>A</b> .,	Frank, Sp					
A.			ay method a	abacter of pay posterior	, vila	
(*) (*)			e de la companya del companya de la companya del companya de la co		• •	re. "

## Material Safety Data Sheet May be used to comply with

OSHA's Hazard Communication Standard, CFR 1910,1200. Standard must be insulted for specific requirements.

#### U.S. Department of Labor

Occupational Safety and Health Administration (Non-Mandatory Form) Form Approved



OMB No. 1218-0072 DENTITY (As Used on Label and List) #104 "Special" Note: Blank spaces are not permitted. If any item is not applicable, or no information is evaluable, the space must be marked to indicate that ... Hi-Speed Chain, Wire Rone, and Cable Lubricant with Moly Section I Manufacturer's Name **Emergency Telephone Number** Hydrotex, Inc. (214) 638-7400 Address (Number, Street, City, State, and ZIP Code)
P.O. Box '560707 Telephone Number for b (214) 638-7400 Date Prepared 3-31-87 Dallas, Texas 75356-0707 Bignature of Preparer (aptions) Section II - Hazardous Ingredients/Identity Information Other Line Hezardous Components (Specific Chemical Identity: Common Name(s)) OSHA FEL ADDIN TLV Recommended to (aptone) Severely Hydrotreated Mineral Oil 5mg/cu.m.air(mist) N/A N/A Liquified Petroleum Gas CAS#75-28-5&74-98-6 N/A 1000PPM N/A Section III - Physical/Chemical Characteristics **Boiling Paint** Specific Gravity (HgO = 1) 600°F (Concentrate) 90 Vapor Pressure (mm Hg.) Melbing Point N/A M/A Vapor Density (AIR - 1) Eveporation Rate N/A (Bulyi Acetate - 1) N/A Scholiny in Water NIL Appearance and Odor Gray Aerosol, Slight Solvent Odor Section IV — Fire and Explosion Hazard Data LEL Flesh Point (Method Used) Florenable Limbs 400°F (Concentrate) C.O.C. Extraplishing Made Dry Chemical, Carbon Dioxide, Foam, and Water Spray. Special Fire Fighting Procedures Cool containers exposed to heat with water spray. Unusual Fire and Explosion Hazards Expansion of over heated containers may cause explosion bazard.

ection V — I	Reactivity Data				
Let: May	Unstable		Conditions to Audid Open F	lane	
	Stable	X			
competibility (A	deteriols to Aveid)	Str	ong Oxidants		
ezardous Decom	position or Syprodu				
Azardous	May Occur	r	Oxides of Carbon Conditions to Avoid		
olymerication.	WE Not Copur	<b> </b>	None		
		X			
	Health Hazard				
toute(s) of Entry:		X X	Sherr X	<del></del>	*Gangari
teelth Hezards (	Acute and Otronic)				
ACUTE: Eye	es-Irritatio	1	Ingestion-Cathartic	Effect	Inhalation-Dizziness, Narcosis
CHRONIC:	Skin-Irritat	ion,			
Carcinogenicity:	NYI N		<b>WAN</b>	Nonegraphs	17 CGHA Regulated?
				<del></del>	
Section VII Steps to Be Tel Contain scoop up	material and and dispose	lor \$4 is Reid trai	ofe Handling and Use  asset or Spilled  asfer into a waste co  accordance with all a	ontainer. applicab	seek medical attention. Skin-Wash of ical attention.  Absorb residue with absorbant mater le Federal, State, and Local Regulations.
	<b>Be Taken in Handin</b> ay form open				re to temperatures above 130°F may
Other Preceute					
	NONE				
Cartles M	I — Control Med				
Bassisses Pa	medica directly has	<u> </u>	<u> </u>		
In a con	fined area.	IOSI	l approved respirator	for org	
A SELECTION SALES			Needed		M/ A
	Mechanical (Gen		N/A	Oin	N/A
Protective Glo	ves Plas	tic		Bye Protection	Safety Glasses
Other Patrick	ve Clathing or Equip		None		
Workstygen	Precioes		None		
				• •	A HEADO 1884-491-329/43773



## North American Refractories Co.

900 Hanna Building 1422 Euclid Avenue Cleveland, Ohio 44115 216/621-5200

#### NORTH AMERICAN REFRACTORIES PRODUCT SAFETY DATA SHEET

MANUFACTURER

MSDS # 3040-00

NORTH AMERICAN REFRACTORIES

Vendor:

Emergency Phone Number East (814) 236-3890 West (415) 432-4741

Date Issued: 04/03/87 Date Revised: 05/22/86

Product Type: Refractory Castable / Gun Material

Trade Name: LITECRETE 50 50#

\*\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION I - PRODUCT IDENTIFICATION \*\*\*\*\*\*\*\*\*

Chemical Name: Insulating Castable Chemical Family: Al203, SiO2, CaO

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION II - CHEMICAL COMPOSITION \*\*\*\*\*\*\*\*\*\*\*\*

Hazardous Ingredients: CAS Number: PCT:

Crystalline Silica N/A less than 20%

Other Ingredients: CAS Number: PCT:

Alumina Silicate 66402-68-4 45% less than Hydrous Alumina Silicate 1332~58~7 less than 15% Hydraulic Setting Cement 12005-57-1 less than 45% Silica 14808-60-7 less than 30%

\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION III - PHYSICAL DATA \*\*\*\*\*\*\*\*\*\*

Appearance and Odor's Tan, granular, dry mixture, odorless.

Flammability: This product is non-flammable and will not support combustion.

Company of the control of the contro

## North American Refractories Co.

900 Hanna Building 1422 Euclid Avenue Cleveland, Ohio 44115 216/621-5200

SECTION V - HEALTH HAZARD

\*\*\*\*\*\*\*

Threshold Limit Value: For respirable dust: 10 divided by (%Qtz. + 2)

expressed as mg/m3.

Effects of Overexposure: Cement may cause irritation to skin and eyes.

Crystalline Silica:

Chronic exposure to dust could contribute to

delayed lung injury (silicosis). Symptoms include

coughing, wheezing, dyspnea, and impaired

pulmonary fuction. Points of attack: Respiratory

system and lungs.

Emergency and First Aid Data:

Skin: Wash thoroughly with seap and water. Eyes: Flush with water for 15 minutes and get

medical help.

\*\*\*\*\*\*\*\*\*\*\*

SECTION VI - REACTIVITY DATA

Stability and Reactivity: This product is stable and non-reactive.

SECTION VII - SPILL AND LEAK PROCEDURES

Steps to be Taken in Case of a Spill:

Avoid generating dust exposure during cleanup.

Waste Disposal Method: Dispose of material according to local, state or

federal regulations and as final used condition of

the product dictates,

SECTION VIII - INDUSTRIAL HYGIENE INFORMATION \*\*\*\*\*\*

Ventilation: Local exhaust recommended to maintain exposures

below TLV.

Respiratory Protection: NIOSH approved dust type for exposures above TLV.

Protective Gloves: Impervious gloves recommended.

Eve Protection: Recommended.

\*\*\*\*\*\*\*\*\*\*\*

SECTION IX - SPECIAL PRECAUTIONS

Special Precautions: Avoid dust generation.

Precautionary Labeling: Product contains crystalline silica and

hydraulic setting cement.

WARNING: Prolonged inhalation of product

dust may cause delayed lung injury (silicosis). Contact may cause irritation to eyes and skin.



MSDS No: 201 Date Prepared: 05/01/1987 Revised/Reviewed: 06/01/1998

4. PRODUCT AND COMPANY IDENTIFICATION

Material Name:

Refractory Ceramic Fiber Product

Common Name:

RCF; Ceramic Fiber, Man-made Vitreous Fiber (MMVF); Synthetic Vitreous Fiber (SVF)

Intended Use:

High temperature industrial thermal insulation

Trade Names:

Kaowool®; Cerafiber®; Cerawool®; Cerachem®; Uni-Bloc®; Saber-Bloc®; Quad-Bloc™; Pyro-Fold®; Ultrafelt®; Pyro-Blanket®; Pyro-Log™; Cerablanket®; Z-Blok®; Pyro-Bloc® Blanket, Modules, Strips, Bulk, Packing, Insulation, Shapes, Rope, Engineered Fiber

(all grades)

Manufacturer/Supplier:

THERMAL CERAMICS INC. P.O. BOX 923: DEPT. 300 AUGUSTA, GA 30903-0923

Product Stewardship Program: 800-722-5681 / FAX: 706-560-4053 For additional MSDS's, call our automated FAXBACK: 800-329-7444

#### 2 COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT

CAS NUMBER PERCENT

OSHA PEL

ACGIH TLV

MANUFACTURER RECOMMENDED

Allenda, and an analysis of the second of th

Refractories, fibers, aluminosilicate

142844-00-6

95 - 100

Not Established

Not Established

0.5 f/cc \*

#### NOTES:

\*Thermal Ceramics' recommended exposure guideline (REG) for respirable fibers as an 8 hour time weighted average (TWA) exposure, based on air samples collected and analyzed using NIOSH method 7400(B).

(See Section 8 for Personal Protection Guidelines.)

#### SEE HAZARDS DENTIFICATION

#### **EMERGENCY OVERVIEW**

#### " WARNING "

- Possible cancer hazard by inhalation. [SEE BELOW]
- Pre-existing medical conditions, including dermatitis, asthma or chronic lung disease may be aggravated by exposure; individuals who are atopic (with a history of allergies) may experience greater amounts of skin and respiratory irritation.

#### Possible Health Effects

Target Organs:

Eyes, skin and respiratory system

Primary Entry Route:

Inhalation

Acute effects:

Upper respiratory physical irritation. Irritation and inflammation to the eyes on contact and to

the skin on prolonged contact.

Page 1 Of 8

THERMAL CERAMICS

PAGE. 002

05/01/1987 Revised/Reviewed: MSDS No: 201 Date Prepared: 06/01/1998

Chronic effects:

Studies to date, involving occupationally exposed workers, have not identified any increased incidence of respiratory disease. Long-term, high-dose exposure to specially-sized, rodent respirable fiber has resulted in the development of fibrosis, lung cancer and mesothelioma in rats & hamsters. [See Section 11 of this MSDS for more information.]

Hazard Classification:

Although studies, involving occupationally exposed workers, have not identified any increased incidence of respiratory disease, results from animal testing have been used as the basis for hazard classification:

The Seventh Annual Report on Carcinogens (1994), prepared by the National Toxicology Program (NTP), classified respirable refractory ceramic fiber (RCF) and glasswool as substances reasonably anticipated to be carcinogens.

The International Agency for Research on Cancer (IARC) has classified man-made vitreous fibers (MMVF), including fibrous glasswool, mineral wool (rockwool & slagwool), and refractory ceramic fiber, as possible human carcinogens (Group 2B). The classification of refractory ceramic fiber was based on sufficient evidence of carcinogenicity in animals and no available data in humans.

The State of California, pursuant to Proposition 65, The Safe Drinking Water and Toxic Enforcement Act of 1986, has listed "ceramic fibers (airborne fibers of respirable size)" as a material known to the State of California to cause cancer.

The Commission of The European Communities has classified RCF as a substance which should be regarded as if it is carcinogenic to man.

IARC has also classified respirable crystalline silica, a possible byproduct of RCF devitrification following sustained, high temperature use (>1800°F), as a substance known to be carcinogenic to humans (Group 1). {See Section 16 of this MSDS for more information.]

Signs and Symptoms of Overexposure:

Eye Contact:

Physical irritation - inflammation

Skin Contact:

Physical irritation - rash

Ingestion:

May cause temporary irritation to the gastrointestinal tract.

Inhalation:

Irritation or screness in throat, nose and respiratory tract

#### 4. FIRST AID MEASURES

Eye Contact:

Flush with large amounts of water for at least 15 minutes. Do not rub eyes.

Skin Contact:

Wash affected area gently with soap and water. Skin cream or lotion after washing may be

helpful.

Ingestion: inhalation: Do not induce vomiting; drink plenty of water.

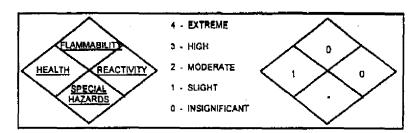
Remove affected person to clean fresh air.

\*\* if any of the symptoms persist, seek medical attention immediately.

Page 2 Of 8

MSDS No: 201 Date Prepared: 05/01/1987 Revised/Reviewed: 06/01/1998

#### 5. FIRE FIGHTING MEASURES



NFPA Unusual Hazards:

Flash Point:

None

Extinguishing Media:

Non-combustible

Explosion Hazards:

Use extinguishing media appropriate to the surrounding fire.

Protective Equipment:

Wear NIOSH approved respirator together with other protective gear appropriate to the

surrounding fire.

#### 6. ACCIDENTAL RELEASE MEASURES

Spill/Leak Procedures:

Avoid creating airborne dust. Follow routine housekeeping procedures. Vacuum only with HEPA filtered equipment. If sweeping is necessary, use a dust suppressant and place material in closed containers. Do not use compressed air for clean-up. Personnel should wear gloves, goggles and approved respirator. Avoid clean-up procedures that could result in water pollution.

#### 7. HANDLING AND STORAGE

Handling:

Limit use of power tools unless in conjunction with local exhaust. Use hand tools whenever possible. Frequently clean the work area with HEPA filtered vacuum or wet sweeping to minimize the accumulation of debris. Do not use compressed air for clean-up.

Handling After-Service:

- Aluminosilicate fibers become friable after exposure to high temperatures and may be partially converted to crystalline silica. [See Section 16 for additional information.]
  Handling after-service fibers may result in exposure to crystalline silica and fibers. It is possible that other contaminants might also be present depending on the material's application. [See Section 8 Personal Protection Equipment.]
- To reduce exposure to these materials, follow the recommendations in Section 8 and minimize dust by dampening the material with a water/surfactant mist. Do not allow water to

accumulate on the floor.

Storage:

This product is stable under all conditions of storage. Store in original factory container in a

dry area. Keep container closed when not in use.

#### 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

**Engineering Controls:** 

Use engineering controls such as ventilation and dust collection devices to reduce airborne fiber concentrations to the lowest attainable level.

Respiratory Protection:

When it is not possible or feasible to significantly reduce airborne fiber and dust levels through engineering controls, or until they are installed, employees are encouraged to use good work practices together with respiratory protection. Before providing respirators to employees (especially negative pressure type), employers should 1) monitor for airborne fibers and respirable cristobalite concentrations using NIOSH method 7400(8) and 7500 respectively and select the appropriate respiratory protection based upon the results of that monitoring, 2) have the workers evaluated by a physician to determine the workers' ability to wear respirators, and 3) implement respiratory protection training programs. Use NIOSH certified

Page 3 Of 8

MSDS No:

201

Date Prepared:

05/01/1987

Revised/Reviewed: 06/01/1998

respirators, in compliance with OSHA Respiratory Protection Standard 29 CFR 1910.134 and 29 CFR 1926.103, for the particular hazard or airborne concentrations to be encountered in the work environment. For the most current information on respirator selection, contact your supplier.

#### Recommended Respiratory Protection When Handling RCF Products

#### AS-PRODUCED and AFTER-SERVICE FIBER (1)

CONCENTRATION (2)	RESPIRATOR	į
Up to 0.5 f/cc	Disposable particulate respirator (N, R, or P, 95 rated) (3) (4)	ĺ
0.5 f/cc - 5 f/cc	Half-mask, air-purifying respirator with high efficiency particulate air (HEPA) or P100 rated filter cartridges.	ĺ
5 f/cc - 25 f/cc	Full facepiece air-purifying respirator with HEPA or P100 rated filter cartridges or powered air-purifying respirator (PAPR) with HEPA or P100 rated filter cartridges.	
> 25 f/cc	Full facepiece positive pressure supplied air respirator.	

<sup>(1)</sup> Unless air monitoring data indicates a lower exposura, as a minimum, use a full facepiece air-purifying respirator with HEPA or P100 rated filter cartridges during furnace tear out or when conducting RCF removal in a confined area. [See Section 16] (2) Eight hour time weighted average (TWA) exposures determined by air samples collected and analyzed using NIOSH method

NOTE: For unknown exposures or when working with other contaminants, consult an industrial hygienist for air monitoring and respirator selection.

Protective Clothing:

Wear full body clothing, gloves, hat and eye protection. Wash work clothes separately from other clothing. Rinse washer after use. If you take work clothing home, it is recommended you

vacuum your clothes with a HEPA filtered vacuum before leaving the work area.

Eye Protection:

Goggles/safety glasses with sideshields should be worn.

#### 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance:

White odorless wool-like fibrous material

Chemical Family:

Vitreous Aluminosilicate Fibers

Vapor Pressure:

Not applicable

Boiling Point:

Not applicable

>3200°F (1768°C)

Specific Gravity Range:

Not applicable 2.50 - 2.70

Volatile by Volume (%):

Vapor Density:

Melting Point: Not soluble in water Water Solubility (%):

pH:

Not applicable

## 10. STABILITY AND REACTIVITY

Hazardous Polymerization:

Will not occur

Chemical Incompatibilities:

Hydrofluoric acid, phosphoric acid, strong alkalies

Hazardous Decomposition Products:

None

Page 4 Of 8

<sup>(3)</sup> Not recommended for fiber chopping, blanket/module folding, cutting, installation or other tasks using power tools and machinery (e.g. band sawing, lathing, grinding, drilling, die cutting) unless effective engineering controls reduce fiber exposures. (4) If all present, use only R or P rated filters.

MSDS No: 201 Date Prepared: 05/01/1987 Revised/Reviewed: 06/01/1998

#### MATTOXICOLOGICAL INFORMATION

Epidemiology:

Industry epidemiologic investigations of RCF production workers are ongoing. The preliminary evidence, obtained from employees in RCF manufacturing facilities, is as follows:

- 1) There is no evidence of any fibrotic lung disease (interstitial fibrosis) on x-ray.
- 2) There is no evidence of any lung disease among those employees exposed to RCF that have never smoked. Data, however, indicates that RCF workers who smoke may have a greater reduction in pulmonary function than those who do not. Therefore, it is recommended that persons who work with RCF do not smoke.
- 3) A statistical trend was observed in the exposed population between the duration of exposure to RCF and a decrease in some measures of pulmonary function. These observations are clinically insignificant. The results would be interpreted as being within the normal range if these observations were made on an individual employee.
- 4) Pleural plaques (thickening along the chest wall) have been observed in a small number of employees who had a long duration of employment. There are several occupational and non-occupational causes for pleural plaques. Pleural plaques are a marker of exposure only and under most circumstances are not associated with any measurable effect on lung function.

Toxicology:

A number of toxicologic bioassay studies with rats and hamsters on the health effects of refractory ceramic fiber (RCF) inhalation exposures have been completed. In a lifetime, nose-only inhalation study using rats exposed to specially prepared RCF at a maximum tolerated dose (MTD) (30 mg/m³), the animals developed progressive lung damage (interstitial fibrosis), lung cancer and cancer of the pleural lining between the chest wall and lung (mesothelioma). Hamsters exposed under the same conditions developed interstitial fibrosis and pleural cancer but no lung cancer.

A multiple dose inhalation study in rats at exposures of 3, 9, and 16 mg/m³ (approximately 25, 75 and 115 fiber/cc) was also carried out. The dose responsiveness of rats to the adverse effects of RCFs was established. At all exposure levels there was no statistically significant increase in lung tumors in the animals. A single mesothelioma was diagnosed in one of the 116 animals in the 9 mg/m³ exposure group. No fibrosis was observed in the 3 mg/m³ exposure group. These data tend to indicate that a critical dose level may exist below which neither fibrosis nor tumors are observed, i.e., a practical threshold.

#### 12 ECOLOGICAL INFORMATION

Adverse effects of this material on the environment are not anticipated.

#### 13 DISPOSAL INFORMATION

Waste Management:

To prevent waste materials becoming airborne, a covered container or plastic bagging is recommended. Comply with federal, state and local regulations. Method of disposal: Landfill. Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate, or otherwise inappropriate.

RCRA:

If discarded in its purchased form, this product would not be a hazardous waste either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal whether a material containing the product or derived from the product should be classified as a hazardous waste (40 CFR 261.20-24).

Page 5 Of 8

THERMAL CERAMICS

PAGE, 006

MSDS No:

201

Date Prepared:

05/01/1987

Revised/Reviewed: 06/01/1998

TCLP Disposal:

As manufactured, refractory ceramic fiber blankets were tested using EPA's Toxicity Characteristics Leaching Procedure (TCLP). Results showed there were no detectable contaminants or detectable leachable contaminants which exceeded the regulatory levels.

#### 14. TRANSPORTINEORMATION

Department of Transportation (D.O.T.):

Hazard Class:

Not regulated

Labels:

Not applicable

Placards: Bill of Lading: Not applicable Product name North America (NA) Number:

United Nations (UN) Number:

Not applicable Not applicable

#### 15 REGULATORY INFORMATION

#### United States Regulations

SARA Title III:

This product does not contain any substances reportable under Sections 302, 304, 313 (40

CFR 372). Sections 311 and 312 apply.

OSHA:

Comply with Hazard Communication Standards 29 CFR 1910.1200 and 29 CFR 1926.59 and Respiratory Protection Standards 29 CFR 1910.134 and 29 CFR 1926.103. Components of this product are considered to be hazardous as defined by the OSHA Hazard Communication

Standard.

TSCA:

All substances contained in this product are listed in the TSCA Chemical Inventory [Section

8(b)].

California:

Listed as "Ceramic Fibers (airborne particles of respirable size)" Proposition 65, The Safe Drinking Water and Toxic Enforcement Act of 1986: Known to the State of California to cause

cancer.

Other States:

RCF products are not known to be regulated by states other than California; however, state and local OSHA and EPA regulations may apply to these products. Contact your local agency

if in doubt.

#### International Regulations

Canadian WHMIS:

Class D-2A Materials Causing Other Toxic Effects

Canadian EPA: European Class: All substances in this product are listed, as required, on the Domestic Substance List (DSL). Refractory ceramic fiber (RCF) has been classified by the European Union as Category 2 carcinogen, that is it "should be regarded as if it is carcinogenic to man". It has also been

classified as an "irritant".

#### 16. OTHER INFORMATION

#### Precautionary Measures to be Taken After Service and Upon Removal:

As manufactured, RCF products are vitreous aluminosilicates which may transform upon heating at temperatures above 1800°F to mullite and cristobalite (a form of crystalline silica). Removal of after-service RCF may generate respirable dust. Prolonged/repeated inhalation of respirable free crystalline silica dust may cause delayed lung injury (silicosis). In evaluating crystalline silica as a cancer risk, the International Agency for Research on Cancer (IARC) reviewed several studies from different industries and concluded that crystalline silica from occupational sources inhaled in the form of quartz or cristobalite is carcinogenic to humans (Group 1). [IARC Monograph Vol. 68, June 1997]. However, in reaching its conclusion, IARC stated that the carcinogenicity in humans could not be found in all industries reviewed and that carcinogenicity might be dependent on inherent characteristics of crystalline silica or on external factors affecting biological activity (e.g. cigarette smoking) or distribution of its polymorphs. The OSHA PEL for respirable cristobalite is 0.05 mg/m³. Appropriate ventilation and respiratory protection should be provided in compliance with OSHA standards. (See Section 8)

Page 6 Of 8

201 05/01/1987 MSDS No: Date Prepared: Revised/Reviewed: 06/01/1998

#### **HMIS Hazard Rating:**

HMIS Acute Health:

1\*

HMiS Fiammable:

0

**HMIS Reactivity:** 

0

HMIS Personal Protective:

To be determined by user.

\*See Section 3 of the MSDS for possible chronic health effects.

#### SARA Title III Hazard Categories:

Acute Health:

Yes

Pressure Hazard:

No

Chronic Health:

Yes

Reactivity Hazard:

No

Fire Hazard:

Nο

#### Definitions:

ACGIH:

American Conference of Governmental Industrial Hygienists

CAS:

Chemical Abstracts Service Registry Number

EPA:

Environmental Protection Agency

f/cc:

Fibers per cubic centimeter High Efficiency Particulate Air

HEPA:

Hazardous Materials Identification System

HMIS: mg/m3:

Milligrams per cubic meter of air

mppcf:

Million particles per cubic meter

MSHA:

Mine Safety and Health Administration National Fire Protection Association

NFPA: NIOSH:

National Institute for Occupational Safety and Health

OSHA:

Occupational Safety and Health Administration

RCRA:

Resource Conservation and Recovery Act

SARA:

Superfund Amendments and Reauthorization Act

Title III:

Emergency Planning and Community Right to Know Act

...Section 302:

Extremely Hazardous Substances

...Section 304:

Emergency Release MSDS/List of Chemicals

...Section 311: ...Section 312:

Emergency and Hazardous Inventory

...Section 313:

Toxic Chemicals Release Reporting

STEL:

Short-Term Exposure Limit

TCLP:

Toxicity Characteristics Leaching Procedures (EPA)

TLV:

Threshold Limit Values (ACGIH)

TSCA:

Toxic Substance Control Act

WHMIS:

Workplace Hazardous Materials Information System (Canada)

29 CFR 1910.134 & 1926.103:

OSHA Respiratory Protection Standard

29 CFR 1910,1200 & 1926.59:

**OSHA Hazard Communications Standard** 

Revisions:

Replaces revision 03/16/98. Revised Sections 3, 8 and 11 with updated information. 

Reasonable care has been taken in the preparation of the information contained in this Material Safety Data Sheet and is given in good faith. However, Thermal Ceramics Inc. assumes no responsibility as to the accuracy or suitability of such information and no warranty, expressed or implied, is made.

Page 7 Of 8

MSDS No: 201 Date Prepared: 05/01/1987 Revised/Reviewed: 06/01/1998

## PRODUCT SAFETY INFORMATION

#### REFRACTORY CERAMIC FIBER PRODUCT

#### WARNING:

This product contains refractory ceramic fiber, which has been identified by the International Agency for Research on Cancer (IARC) as possibly carcinogenic to humans.

Avoid breathing fiber particulates and dust

#### RISKS:

- Possible cancer hazard by inhalation.
- · May cause temporary irritation to eyes, skin and respiratory tract.

#### PRECAUTIONARY MEASURES:

- · Minimize airborne particulates and dust with engineering controls.
- Wear a NIOSH certified respirator.
- Wear long sleeved, loose-fitting clothing, eye protection, and gloves.
- · Wash work clothing separately and rinse washing machine after use.

#### FIRST AID MEASURES:

Eyes:

Flush with Water.

Şkin:

Wash with soap and warm water.

Ingestion:

Do not induce vomiting. Get medical attention if gastrointestinal symptoms develop.

Inhalation:

Remove to fresh clean air.

If any of the above irritations persists, seek medical attention immediately.

FOR ADDITIONAL PRODUCT INFORMATION AND WORK PRACTICES, REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS).

THERMAL CERAMICS INC. P.O. BOX 923 DEPT. 300 AUGUSTA, GA 30903-0923 (800) 722-5681



Canadian WHMIS Class D-2A: Material causing other toxic effects.

Label No:

1-0991 (Rev. 05/98)

Page 8 Of 8

MSDS GROUP: 151 PAGE 1 OF 2

MATERIAL SAFETY DATA SHEET THE BABCOCK & WILCON COMPANY DATE PREPARED: 05/01/87

Emergency Telephone Mumber

(404) 798-4200

INSULATING PRODUCTS DIVISION DATE REVISED.

- PRODUCT IDENTIFICATION

#### INSULATING FIREBRICK PRODUCTS:

K-20 IFB K-23 IFB K-26 LI IFB K-28 IFB K-30 IFB K-3000 IFB K-1620 IFB INSALCOR

--- SECTION I -

Manufacturer's Name BABCOCK & WILCOX, INSULATING PRODUCTS DIVISION Address (Number, Street, City, State, Zip)

P.O. BOX 923, 2102 OLD SAVANNAH ROAD, AUGUSTA: GBORGIA 30903 Chemical Name and Synonyme Chemical Family

Chemical Name and Synonyme

REPRACTORY INSULATING FIREBRICK N/A MIXTURB

----- SECTION II-HAZARDOUS INGREDIENTS

AS MANUFACTURED NONE - SEE ALSO SECTION V

TLV/PEL

AFTER NORMAL USE SEE SECTION IX

--- SECTION III-PHYSICAL DATA Boiling Point N/A Specific Gravity Range (H2O = 1)

Vapor Pressure (mm Hg.) N/A 0.5 - 1.3

Vapor Density (Air = 1) N/A Solubility in Water INSOLUB Percent Volatile by Volume (%) N/A

INSOLUBLE Evaporation Rate Appearance and Odor (Butyl Acetate = 1)

POROUS BRICK - NO ODOR.

----- SECTION IV-FIRE AND EXPLOSION HAZARD DATA Extinguishing Media Flash Point (Method Used) Flammable Limit N/A

Special Fire Fighting Procedures UEL Unusual Fire and Explosive Hazards N/A N/A N/A N/A

MATERIAL SAFETY DATA SHEET THE BABCOCK & WILCOX COMPANY INSULATING PRODUCTS DIVISION

HSDS GROUP: 151

PAGE 2 OF 2

--- SECTION V-HEALTH HAZARD DATA -----

Primary Route of Entry INHALATION, INGESTION, SKIN CONTACT

Effects of Overexposure

DURING INSTALLATION, IT IS COMMON TO HANDLE AND CUT THESE PRODUCTS. THE CUTTING PROCESS MAY GENERATE RESPIRABLE NUISANCE DUST [TLV: 10 mg/cu m, total dust; PEL: 5 mg/cu m, reepirable dust and 15 mg/cu m, total dust]. EXPOSURE TO NUISANCE DUST MAY CAUSE TEMPORARY IRRITATION OR DISCOMPORT OF THE SKIN, EVES, NOSB, THROAT, OR LUNGS AND MAY AGGRAVATE BRONCWIAL DISORDERS.

THESE PRODUCTS DO NOT APPEAR ON ANY NTP OR LARC LISTS/REPORTS OF CARCINGENS.

Emergency and First Aid Procedures

Inhalation: REMOVE TO FRESH AIR. Ingestion: DRINK PLENTY OF WATER.

SKID: WASH WITH MILD SOAP AND WATER. Eyes: FLUSH WITH PLENTY OF WATER. IP

IRRITATION PERSISTS, CALL A PHYSICIAN.

----- SECTION VI-REACTIVITY DATA Stability: STABLE

Hazardous Polymerization: WILL NOT OCCUR

Materials/Conditions to Avoid: NONE

SECTION VII-SPILL OR LEAK PROCEDURES

Spill or Leak: N/A

Waste Disposal: Wastes are not hazardous wastes as defined by rcra (40 cfr 281). Comply with federal, state and local regulations. Method of disposal -

LANDFILL. RQ - N/A

---- SECTION VIII-SPECIAL PROTECTION INFORMATION ---

Respiratory Protection

DUST RESPIRATOR IN COMPLIANCE WITH OSHA STANDARD 29 CFR 1910.134 (MSHA/NIOSH-APPROVED, AIR PURIFYING, HALF MASK OR FULL FACEPIECE RESPIRATOR WITH APPROPRIATE FILTER PAD OR CARTRIDGE)

Ventilation

Local Exhaust Mechanical (General)

FOLLOW OSHA STANDARD 29 CFR 1910.94 FOLLOW OSHA STANDARD 29 CFR 1910.94

Protective Gloves RECOMMENDED

Eve Protection GOGGLES/SAFETY GLASSES RECOMMENDED

Other Protective Equipment AS REQUIRED TO MEET APPLICABLE OSHA STANDARDS.

----- SECTION IX-SPECIAL PRECAUTIONS

Precautions To Be Taken After Service and Upon Removal AS MANUFACTURED, THESE PRODUCTS ARE ALUMINOSILICATES WHICH COULD TRANSPORM UPON BEATING TO MULLITE AND CRISTOBALITE (A FORM OF CRYSTALLINE SILICA) REMOVAL OF THESE PRODUCTS AFTER SERVICE MAY GENERATE DUST REPEATED INHALATION OF RESPIRABLE PREE CRYSTALLINE SILICA DUST MAY CAUSE DELAYED LUNG INJURY (SILICOSIS). THE RECOMMENDED PEL FOR RESPIRABLE CRISTOBALITE IS CALCULATED PROM THE FORMULA:

10 mg/cu m 

% Respirable Quartz + 2

THE RECOMMENDED TLY FOR RESPIRABLE CRISTOBALITE IS 0.05 mg/cu m. APPROPRIATE VENTILATION AND RESPIRATORY PROTECTION SHOULD BE PROVIDED IN COMPLIANCE WITH OSHA 29 CFR 1910.94 AND 1910.134, RESPECTIVELY.

#21

MSDS GROUP: 151 PAGE 1 OF 2

MATERIAL SAFETY DATA SHEET THERMAL CERAMICS

DATE PREPARED: 05/01/87 DATE REVISED: 03/01/88

\_\_\_\_\_PRODUCT IDENTIFICATION ------

#### INSULATING FIREBRICK PRODUCTS:

K-20 IFB K-23 IFB K-25 IFB K-28 L1 IF8 K-28 IFB K-30 IFB K-1620 IFB K-3000 IFB INSALCOR DEVELOPMENTAL MIX 230-I

\_\_\_\_\_SECTION I ------Manufacturer's Name Emergency Telephone Number (404) 796-4200

THERMAL CERANICS Address (Number, Street, City, State, Zip) P.O. BOX 923, 2102 OLD SAVANNAH ROAD. AUGUSTA. GEORGIA 30903 Chemical Name and Synonyms Chemical Family

REFRACTORY INSULATING FIREBRICK N/A MIXTURE [CAS # 68402-68-4]

----- SECTION II+HAZARDOUS INGREDIENTS ------

A. AS MANUFACTURED NONE - SEE ALSO SECTION V

WT. X

B. AFTER NORMAL USE SEE SECTION IX

----- SECTION III-PHYSICAL DATA Specific Gravity Range (H2O = 1)

Boiling Point N/A Vapor Pressure (mm Hg.) N/A 0.5 - 1.3

Vapor Density (Air = 1) N/A Percent Volatile by Volume (%) N/A Solubility in Water Insoluble Evaporation Rate

Appearance and Odor (Butyl Acetate = 1)

POROUS BRICK - NO ODOR.

------ SECTION IV-FIRE AND EXPLOSION HAZARD DATA ---------Flash Point (Method Used) Extinguishing Media Flammable Limit N/A N/A

Unusual Fire and Explosive Hazards Special Fire Fighting Procedures LEL UEL N/A N/A N/A N/A

MSDS GROUP: 151

#### MATERIAL SAFETY DATA SHERT THERMAL CERAMICS

PAGE 2 OF 2

----- SECTION V-HEALTH HAZARD DATA -----

Primary Route of Entry INHALATION, INGESTION, SKIN CONTACT

Effects of Overexposure

DURING INSTALLATION, IT IS COMMON TO HANDLE AND CUT THESE PRODUCTS. THE CUTTING PROCESS MAY GENERATE RESPIRABLE NUISANCE DUST [TLV: 10 mg/cu m. total dust; PEL: 5 mg/cu m, respirable dust and 15 mg/cu m, total dust]. EXPOSURE TO NUISANCE DUST MAY CAUSE TEMPORARY IRRITATION OR DISCOMFORT OF THE SKIN, EYES, NOSE, THROAT, OR LUNGS AND MAY AGGRAVATE BRONCHIAL DISORDERS.

THESE PRODUCTS DO NOT APPEAR ON ANY NTP OR LARC LISTS/REPORTS OF CARCINOGENS.

Emergency and First Aid Procedures

Inhalation: REMOVE TO FRESH AIR. lugestion: DRINK PLENTY OF NATER. Skin: WASH WITH MILD SOAP AND WATER. Eyes: FLUSH WITH PLENTY OF WATER. IF IRRITATION PERSISTS, CALL A PHYSICIAN.

----- SECTION VI-REACTIVITY DATA ------Stability: STABLE Hazardous Polymerization: WILL NOT OCCUR

Materials/Conditions to Avoid: NONE

----- SECTION VII-SPILL OR LEAK PROCEDURES -------

Spill or Leak: N/A

Waste Disposal: Wastes are not Hazardous Wastes as Defined by RCRA (40 CFR 261). COMPLY WITH FEDERAL, STATE AND LOCAL REGULATIONS. METHOD OF DISPOSAL -LANDFILL: RQ - N/A

------ SECTION VIII SPECIAL PROTECTION INFORMATION --------

Respiratory Protection

DUST RESPIRATOR IN COMPLIANCE WITH OSHA STANDARD 29 CFR 1910.134 (NSHA/NIGSH-APPROVED, AIR PURIFYING, HALF MASK OR FULL FACEPIBCE RESPIRATOR WITH APPROPRIATE FILTER PAD OR CARTRIDGE)

Ventilation

Local Exhaust Mechanical (General)

FOLLOW OSHA STANDARD 29 CFR 1910.94 FOLLOW OSHA STANDARD 29 CFR 1910, 94

Protective Gloves RECOMMENDED

Eye Protection GOGGLES/SAFETY GLASSES RECONNENDED

Other Protective Equipment

AS REQUIRED TO MEET APPLICABLE OSHA STANDARDS.

SECTION IX SPECIAL PRECAUTIONS -----

Precautions To Be Taken After Service and Upon Removal AS MANUFACTURED, THESE PRODUCTS ARE ALUMINOSILICATES WHICH COULD TRANSFORM UPON HEATING TO MULLITE AND CRISTOBALITE (A FORM OF CRYSTALLINE SILICA). REMOVAL OF THESE PRODUCTS AFTER SERVICE MAY GENERATE DUST. REPEATED INHALATION OF RESPIRABLE FREE CRYSTALLINE SILICA DUST MAY CAUSE DELAYED LUNG INJURY (SILICOSIS). IARC HAS PLACED CRYSTALLINE SILICA IN CATEGORY 2A (IARC BELIEVES THERE IS SUPPLICIENT EVIDENCE OF CARCINOGENICITY IN ANIMALS BUT EVIDENCE FOR THE CARCINGGENICITY TO HUMANS IS LIMITED). THE RECOMMENDED PEL FOR RESPIRABLE CRIS-TOBALITE IS CALCULATED FROM THE PORNULA: 10 mg/cu m

1/2(----)

\* Respirable Quartz + 2

THE RECOMMENDED TLV FOR RESPIRABLE CRISTOBALITE IS 0.05 mg/cu m. APPROPRIATE VENTILATION AND RESPIRATORY PROTECTION SHOULD BE PROVIDED IN COMPLIANCE WITH OSHA 28 CFR 1910, 94 AND 1910, 134, RESPECTIVELY.

NATIONAL SANITARY SUPPLY CO. 13217 S. Figuroa Street Los Angeles California 90061 Tel. No.213/770-6795 Emergency Tel. No. 213/327-6795

MATERIAL SAFETY DATA SHEET SECTION 1. IDENTIFICATION OF PRODUCT Product Name: LEMON SHINE AEROSOL/SHINEZIT Date Issued: 7/01/87
Product Code: FPC002/787 Supercedes: 7/15/86
Type of Product: FURNITURE POLISH AEROSOL National Item#: 3220XX
Prepared By: IAN R. GECKER CAS NUMBER EXPOSURE LIMITS IN AIR ACGIH-TLV OSHA-PEL INGREDIENTS SECTION 2. PETROLEUM SOLVENT 1,1,1 TRICHLOROETHANE ISOBUTANE/PROPANE 64742489 300 PPM 71556 350 PPM 75285/74986 800 PPM 300 PPM 350 PPM 800 PPM SECTION 3. PHYSICAL DATA: Vapor Density (air=1): (1.0 Melting Point or Range, F: N/A Specific Gravity g/cc a 60 F: N/A Boiling Point or Range, F: N/A Soulbility in Water: SLIGHT Evaporation Rate (Buace=1): >1.0 Vapor Pressure, psig a 70 F: 40-50 pH a 25 C: N/A Apperance and Odor: WHITE CREAMY SPRAY/LEMON Flame Extension a 70 F: NONE Flash Point F (TCC): N/A Section 4. FIRE AND EXPLOSION HAZARD DATA Flash Point, F (TCC): N/A
Auto Ignition Temperature, F: N/A
Flammable Limits in Air, Volume %: LOWER (LEL) 0.9 UPPER (UEL) 7.0
Fire Extinguishing Materials: WATER SPRAY, FOAM, CARBON DIOXIDE, DRY
CHEMICAL
Special Firefighting Procedures: FIREFIGHTER MUST WEAR FULL BUNKER GEAR
(HELMEI, FACE SHIELD, COATS, BOOTS, GLOVES). WEAR A NIOSH APPROVED
SELF-CONTAINED BREATHING APPARTUS. CONTAINERS EXPOSED TO HEAT MUST
BE WATER COOLED TO PREVENT SURSTING AND ROCKETING AND FURTHER
SPEWING OF IGNITED FLAMMABLE CONSTITUENTS.
Unusual Fire And Exposion Hazards: AEROSOL PRESSUIZED CONTAINERS WILL
BURST AND/OR ROCKET WHEN EXPOSED TO TEMPERATURES ABOVE 120 F. SECTION 5. REACTIVITY DATA Stability: STABLE Conditions to Avoid: EXPOSURE TO TEMPERATURES IN EXCESS OF 120 F, HEAT,
SPARK OPEN FLAME, OR OTHER SOURCES OF IGNITION.
Incompatibility (materials to avoid): OXIDIZERS AND ALKALIES.
Hazardous Decomposition Products (including combustion products): CARBON
DIOXIDE, CARBON MONOXIDE, HYDROGEN CHLORIDE AND ORGNIC VAPORS OF
UNKNOWN COMPOSITION.
Hazardous Polymerization: WILL NOT OCCUR Hazardous Polmerization: WILL NOT OCCUR SECTION 6. SPILL, LEAK AND DISPOSAL PROCEDURES Spill Response: TURN OFF ALL SOURCES OF IGNITION. VENTILATE AREA COMPLETELY. DIKE AREA. APPLY AN ABSORBENT AND SWEEP UP. Waste Disposal: PLACE INTO CONTAINERS FOR DISPOSAL. Note: DISPOSE OF ALL WASTE IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATION.

SECTION 7. HEALTH HAZARD DATA SYMPTOMS OF OVEREXPOSURE
Inhaled: NAUSEA, DIZZINESS, HEADACHE, ANAESTHETIC EFFECTS THROAT
IRRITATION ABOVE 1000 PPM EXPOSURE FROM 1,1,1 TRICHLOROETHANE.
Contact with Skin or Eyes: IRRITANT.
Absorbed Through Skin: NOT READILY ABSORBED.
Swallowed: NAUSEA, VOMITING.
HEALTH EFFECTS OR RISKS FORM EXPOSURE
Acute: NASAL AND RESPIRATIORY IRRITATION.
Chronic: CHRONIC EXPOSURE TO 1,1,1 TRICHLOROETHANE HAS CAUSED LIVER
TOXIC EFFECTS IN TEST ANIMALS. SECTION 8. EMERGENCY AND FIRST AID PROCEDURES Eye Contact: FLUSH WITH WATER FOR 15 MINUTES. GET MEDICAL ATTENTION.
Skin Contact: FLUSH WITH WATER. WASH WITH SOAP AND WARM WATER. GET MEDICAL ATTENTION.
Inhaled: REMOVE TO FRESH AIR. IF NOT BREATHING GIVE CPR OR OXYGEN. GET IMMEDIATE MEDICAL ATTENTION.
Swallowed: DO NOT INDUCE VOMITING. GET IMMEDIATE MEDICAL ATTENTION.
SUSPECTED CANCER AGENT
NO: THIS PRODUCT'S INGREDIENTS ARE NOT FOUND IN THE LISTS BELOW.
FEDERAL OSHA, NTP, IARC
CALIFORNIA EMPLOYERS USING CAL/OSHA-REGULATED CARCIONGENS MUST REGISTER WITH CAL/OSHA. THE CAL/OSHA AND FEDERAL OSHA CARCINOGEN LISTS ARE MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE
PRE-EXISTING SKIN, EYE AND LUNG DISORDERS MAY BE AGGRAVATED BY EXPOSURE
TO THIS PRODUCT. ACUTE AND CHRONIC LIVER DISEASE AND RYTHM DISSORDERS
OF THE HEART FROM 1,1,1 TRICHLOROETHANE.
Recommendation To Physician: ASPIRATION OF MATERIAL INTO LUNGS CAN
CAUSE CHEMICAL PNEUMONITIS WHICH CAN BE FATAL. SECTION 9. SPECIAL PROTECTION INFORMATION Ventilation and Engineering Controls: USE WITH ADEQUATE VENTILATION.
Respiratory Protection: NONE REQUIRED IF USED IN ACCORDANCE WITH Respiratory Prot DIRECTIONS. DIRECTIONS.

Eye Protection: NONE REQUIRED IF USED IN ACCORDANCE WITH DIRECTIONS.

Gloves: NONE REQUIRED IF USED IN ACCORDANCE WITH DIRECTIONS.

Other Clothing and Equipment: NONE REQUIRED IF USED IN ACCORDANCE WITH DIRECTIONS.

Work Practices, Hygenic Practices: WASH WITH SOAP AND WATER BEFORE EATING, SMOKING, DRINKING OR USING TOILET FACILITIES.

Other Handling and Storage Requirements: HANDLE AND STORE IN ACCORDANCE WITH LABEL DIRECTIONS. DO NOT PUNCTURE OR INCIMERATE CONTAINER.

Protective Measures During Maintenance of Contaminated Equipment: FLUSH OFF WITH WATER AND/OR WIPE OFF WITH RAGS ALL CONTAMINATION PRIOR TO WORKING ON EQUIPMENT.

THE INFORMATION ON THIS MATERIAL SAFETY DATA SHEET REPRESENTS THE LATEST DATA AND BEST OPINION AS TO THE PROPER USE AND HANDLING OF THIS PRODUCT UNDER NORMAL CONDITIONS. ANY USE OF THIS PRODUCT DR METHOD OF APPLICATION WHICH IS NOT IN CONFORMANCE WITH THIS DATA SHEET AND THE PRODUCT LABEL DIRECTIONS, IS THE RESPONSIBILITY OF THE USER. THIS MATERIAL SAFETY DATA SHEET WAS PREPARED TO COMPLY WITH THE OSHA HAZARD COMMUNICATION REGULATION.



MANUFACTURER: Owens-Corning Fiberglas Corporation

ADDRESS:

Fiberglas Tower, Toledo, OH 43659

PHONE:

For information purposes 8:00 AM - 5:00 PM Eastern Time

Telephone: (419) 248-8234

FOR EMERGENCY: After 5:00 PM Eastern Time

Telephone: (419) 248-5330

DATE OF PREPARATION: July 20, 1987

PRODUCT NAME(S):

Milled Fibers, Chopped Strands, Continuous Roving, Direct Roving, Yarns, Wet Chop, Woven Roving, Rubber Impregnated Chopped Strand (RICS), Hammermilled Glass Flakes Fiberglas, S2 Glass, Chopped Strand Mat, Continuous Strand Mat, Bi-Ply Mat, Lay-up Mat

comme Gistori

7014

TOTAL TRACTIC

SECTION I - COMPONENT DATA

HAZARDOUS INGREDIENTS

COMMON NAME CHEMICAL NAME C.A.S. NUMBER

Fiberglass Continuous Fibrous Glass 65997-17-3

Filament

Polyester Sized Fiberglass (Chopped Strand Mat, Continuous Strand Mat,  $Bi-Ply^R$  Mat and Lay-up Mat)

SECTION II - PHYSICAL DATA

SPECIFIC GRAVITY (H20=1): ND BOILING POINT (°F): NA

MELTING POINT: NA

VAPOR PRESSURE (mmHg @ 20°C): NA

PERCENT VOLATILE BY VOLUME: NA

VAPOR DENSITY (AIR=1): NA EVAPORATIVE RATE (ETHYL ETHER=1): NA

SOLUBILITY IN WATER: Insoluble pH: NA

APPEARANCE AND ODOR: White to off white solid/no odor

White roll/no odor

SECTION III - FIRE & EXPLOSION HAZARD DATA

FLASH POINT(°F): NA METHOD USED: NA

FLAMMABILITY LIMITS:

UEL: NA LEL: NA

NA - Not Amplicable ND = Not Determined

Appendix33-000421

AUTO-IGNITION TEMPERATURE (°F): NA

EXTINGUISHING MEDIA: Water, Foam, CO2, Dry Chemical

SPECIAL FIRE-FIGHTING INSTRUCTIONS:

'None required.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

None.

#### SECTION IV - REACTIVITY DATA

STABILITY (CONDITIONS TO AVOID):

Stable (none)

INCOMPATIBILITY (MATERIALS TO AVOID):

None

HAZARDOUS DECOMPOSITION PRODUCTS:

Sizings or binders may decompose in a fire. Primary decomposition products include carbon monoxide, carbon dioxide and water.

HAZARDOUS POLYMERIZATION:

Will not occur.

#### SECTION V - HEALTH HAZARD DATA

PRIMARY ROUTE(S) OF ENTRY: Inhalation

HEALTH HAZARDS (ACUTE AND CHRONIC)

#### INHALATION:

#### For Fibrous Glass

ACUTE: Mechanical irritation of the mouth, nose and throat.

CHRONIC: In June, 1987 the International Agency for Research on Cancer (IARC) categorized fiberglass continuous filament as not classifiable with respect to human carcinogenicity. The evidence from human as well as animal studies was evaluated by IARC as insufficient to classify fiberglass continuous filament as a possible, probable, or confirmed cancer causing material.

ADDITIONAL INFORMATION: Fiberglass wool (primarily used for insulation in a variety of applications) was classified as a possible human carcinogen by IARC. For Health Hazard Data applicable to products incorporating fiberglass wool, refer to the Material Safety Data Sheet for fiberglass wool, available free from Owens-Corning Fiberglas Corporation, Fiberglas Tower, Toledo, Ohio 43659.

nerein.

#### 'TION VI - EMERGENCY & FIRST-AID PROCEDURES

#### INHALATION:

None required.

SKIN:

Wash with mild soap and running water.

EYES:

Flush with flowing water for at least 15 minutes and if symptoms persist, seek immediate medical attention.

#### SECTION VII - SPECIAL HANDLING INFORMATION

#### VENTILATION:

May be required in some operations, such as dust generating manufacturing or fabrication operations.

#### WORK HYGIENIC PRACTICES

- Dust Prevention dust collection systems should be used in fabrication operations that have potential for exposure to dust and glass fibers.
- Cleanliness the work area should be kept clean of dust generating debris. Keep waste disposal equipment close to the working area to avoid unnecessary handling of waste materials.
- Eye Protection safety glasses, goggles or face shields should be worn whenever fiberglass continuous filament products are being utilized in such a manner that dust or fibers may get into the eyes.
- Avoid Irritation be careful not to rub or scratch irritated areas. Rubbing or scratching may force the fibers into the skin. (The fibers should be washed off.) Use of barrier creams can, in some instances, be helpful.
- Work Clothes wear loose fitting, long sleeved clothing. (Skin irritation is known to occur chiefly at pressure points such as around the neck and waist.) Gloves may be useful in some applications. Use vacuum equipment to remove fibers from clothes. Compressed air should never be used. Always wash work clothes separately and wipe out the washer/sink in order to prevent loose glass fibers from getting on other articles.

#### ° Use of Respirators

Use of respiratory protection during manufacture or fabrication - appropriate respiratory protection should be used in accordance with the directions of each manufacturer's or fabricator's respiratory protection program.

ะร

e l y

าก เก

> :t iS

#### SECTION VIII - SPILL, LEAK & DISPOSAL PROCEDURES

ACTION TO TAKE FOR SPILLS (USE APPROPRIATE SAFETY EQUIPMENT):

NA

WASTE DISPOSAL METHOD:

Dispose in accordance with federal, state and local regulations. The primary method of disposal is in a municipal or industrial landfill.

EPA HAZARDOUS WASTE NUMBER: NA

This material is not regulated under the "RCRA" hazardous waste regulations.

#### SECTION IX - SPECIAL PRECAUTIONS/ADDITIONAL INFORMATION

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

None required.

DOT INFORMATION

#### HAZARDOUS MATERIAL PROPER SHIPPING NAME:

Not regulated by DOT.

#### HAZARD CLASS:

Nonhazardous

#### UN IDENTIFICATION NUMBER:

None

#### ADDITIONAL INFORMATION:

None

# THERMOSTATIC INDUSTRIES, INC.

LOS ANGELES, CA 90021-2702 (800) 345-4217



#### AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 1 OF 3

ZEP MANUFACTURING COMPANY **ST IN MAINTENANCE PRODUCTS**  DATE : 08/19/87 SUPERSEDES: 05/17/86

ZEP FORMULA 158

PRODUCT NUMBER: 0688

SECTION I - EMERGENCY CONTACTS

P.O. BOX 2015 ATLANTA, GEORGIA 30301

ZEP MANUFACTURING COMPANY NON-OFFICE HOURS, WEEKENDS, AND HOLIDAYS: AREA CODE 404 435-2973, 996-0899, 252-1587, 351-2952, 971-3367 LOCAL POISON CONTROL CENTER ..............

TRANSPORTATION EMERGENCY

TELEPHONE (404)352-1680 (EASTERN TIME ZONE)

BETWEEN S:00A.M.-5:00P.M. CHEMTREC: TOLL FREE 1-800-424-9300 ALL CALLS RECORDED DISTRICT OF COLUMBIA (202)483-7616 ALL CALLS RECORDED

SECTION II - H A Z A R D O U S I N G R E D I E N T S

DESIGNATIONS

TLV EFFECTS (PPM) (SEE REVERSE) PROD. N/D IRR

\*\* SODIUM DODECYLBENZENE SULFONATE \*\* LINEAR ALKYL ARYL SODIUM SULFONATE; CAS# 25155-30-0;

RTECS# DB6825000; OSHA PEL N/D

SPECIAL NOTE: ADVERSE HEALTH EFFECTS WOULD NOT BE EXPECTED UNDER RECOMMENDED CONDITIONS OF USE SO LONG AS PRESCRIBED SAFETY PRECAUTIONS ARE PRACTICED.

SECTION III - HEALTH HAZARD DATA

ACUTE EFFECTS OF OVEREXPOSURE:

THIS PRODUCT MAY IRRITATE EYES AND SKIN UPON CONTACT. INFLAMMATION OF THE EYE IS CHARACTERIZED BY REDNESS, WATERING, AND ITCHING. SKIN INFLAMMATION IS CHARACTERIZED BY ITCHING, SCALING, REDDENING, OR, OCCASSIONALLY, BLISTERING.

#### NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.



By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

#### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen—Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive-Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Éstimated.

FBL: Flammable—At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation—A primary route of exposure through breathing of vapors (see below).

IRR: Irritant-Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable-Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN; Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value-A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time-weighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

#### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.



#### AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 2 0F 3

ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS DATE

: 08/19/87 ZEP FORMULA 158

SUPERSEDES: 05/17/86 PRODUCT NUMBER: 0688

SECTION III - HEALTH HAZARD DATA (CONTINUED)

CHRONIC EFFECTS OF OVEREXPOSURE:

REPEATED OR PROLONGED SKIN CONTACT MAY PRODUCE CHRONIC INFLAMMATION OR DERMATIT-IS, CHARACTERIZED BY REDNESS, SCALING, OR ITCHING. REPEATED EYE EXPOSURE MAY PRODUCE CHRONIC INFLAMMATION OF THE EYE OR CORNEAL DAMAGE.

NONE OF THE INGREDIENTS ARE LISTED AS CARCINOGENS BY IARC, NTP, OR OSHA.

EST'D PEL/TLV: NOT ESTABLISHED PRIMARY ROUTES OF ENTRY: N/A

HMIS CODES: HEALTH 1; FLAM. O; REACT. O; PERS. PROTECT. A ; CHRONIC HAZ. NO

FIRST AID PROCEDURES:

SKIN : FLUSH CONTAMINATED SKIN WITH PLENTY OF WATER. CONSULT A PHYSICIAN

IF IRRITATION DEVELOPS.

EYES : IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, OC-CASIONALLY LIFTING UPPER AND LOWER LIDS. GET MEDICAL ATTENTION AT ONCE.

INHALE: THIS ROUTE OF EXPOSURE IS NOT LIKELY DUE TO PRODUCT NATURE.

INGEST: IF THIS PRODUCT IS SWALLOWED, DO NOT INDUCE VOMITING, IF VICTIM IS

CONSCIOUS GIVE PLENTY OF WATER TO DRINK, GET MEDICAL ATTENTION AT ONCE.

SECTION IV - S P E C I A L P R O T E C T I O N I N F O R M A T I O N

PROTECTIVE CLOTHING : THE USE OF NEOPRENE, NITRILE OR NATURAL RUBBER GLOVES IS STRONGLY RECOMMENDED, ESPECIALLY FOR PROLONGED CONTACT.

: USE OF TIGHT-FITTING SAFETY GLASSES OR GOGGLES IS STRON-EYE PROTECTION

GLY RECOMMENDED, ESPECIALLY WHEN WEARING CONTACT LENSES.

RESPIRATORY PROTECTION: NO SPECIAL MEASURES ARE REQUIRED.

VENTILATION : NO SPECIAL MEASURES ARE REQUIRED.

SECTION V - PHYSICAL DATA

BOILING POINT (F) : APPROX, 215F SPECIFIC GRAVITY : 1.1

PERCENT VOLATILE BY VOLUME (%) : 78 VAPOR DENSITY(AIR=1): N/D VAPOR PRESSURE(MMHG): N/D EVAPORATION RATE(WATER **=1):** 1

PH(CONCENTRATE) SOLUBILITY IN WATER : COMPLETE : 12.0-12.5 PHOUSE DILUTION OF 1%

): 9.0-9.5

APPEARANCE AND ODOR :A CLEAR, DARK BLUE LIQUID WITH MILD, PLEASANT ODOR. 

SECTION VI - FIRE AND EXPLOSION DATA

-LASH POINT(F) (METHOD USED): N/D FLAMMABLE LIMITS LEL N/A UEL N/A

EXTINGUISHING MEDIA : NON-COMBUSTIBLE

SPECIAL FIRE FIGHTING: NONE

UNUSUAL FIRE HAZARDS : NONE

#### NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable. regulations for disposal of wastes. We request that you take the time to discard any previous Material. Safety Data Sheets for this product so that your files remain up-to-date?

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

# ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen-Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible-At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive—Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Éstimated.

FBL: Flammable-At temperatures under 1000F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

ING: Ingestion—A primary route of exposure through swallowing or inquite or solid toochar.

INH: Inhalation—A primary route of exposure through breathing of vapors (see below).

IRR: Irritant—Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable—Category is not appropriate for this product.
N/D: Not Determined—Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.
PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer—Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below):

TLV: Threshold Limit Value-A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.
TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the ESTD PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This timeweighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous. ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals on to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry-this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalizedsystemic or specific-organ toxic effect, which is the state of the state of the systemic or specific organ toxic effect, which is the state of the system of

As a further word of caution. Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grand or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

#### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet. talan kacamatan salah 
Description of the second of The state of the s



#### AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 3 OF 3

ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS DATE

: 08/19/87 ZEP FORMULA 158

SUPERSEDES: 05/17/86 PRODUCT NUMBER: 0688

SECTION VII - REACTIVITY DATA

STABILITY

: STABLE

INCOMPATIBILITY (AVOID) : NONE

POLYMERIZATION : WILL NOT OCCUR

HAZARDOUS DECOMPOSITION: NONE

SECTION VIII - SPILL AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: OBSERVE SAFETY PROCEDURES IN SECTION 4 % 9 DURING CLEAN-UP. ABSORB SPILL ON INERT ABSORBENT MATERIAL (EG ZEP-O-ZORB). PICK UP AND PLACE RESIDUE IN A SUITABLE WASTE CONTAINER OR, IF PERMITTED, FLUSH TO SEWER. THOROUGHLY RINSE SPILL AREA WITH WATER.

WASTE DISPOSAL METHOD:

LIQUID WASTES ARE NOT PERMITTED IN LANDFILLS. THIS PRODUCT IS NOT CONSIDERED A HAZARDOUS WASTE UNDER RORA. UNUSABLE LIQUID MAY BE ABSORBED ON AN INERT ABSORB-ENT (EG ZEP-O-ZORB), DRUMMED, AND TAKEN TO A CHEMICAL OR INDUSTRIAL LANDFILL. IN SOME AREAS DISPOSAL BY FLUSHING INTO A SANITARY SEWER WITH PLENTY OF WATER MAY BE PERMISSIBLE. CONSULT LOCAL, STATE, AND FEDERAL AGENCIES FOR PROPER DISPOSAL METHOD IN YOUR AREA.

RCRA HAZ. WASTE NOS.: N/A

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN WHEN HANDLING AND STORING: STORE TIGHTLY CLOSED CONTAINER IN DRY AREA AT TEMPERATURES BETWEEN 40 AND 120

DEGREES F.

KEEP PRODUCT AWAY FROM SKIN AND EYES.

CLOTHING OR SHOES WHICH BECOME CONTAMINATED WITH SUBSTANCE SHOULD BE REMOVED PROMPTLY AND NOT REWORN UNTIL THOROUGHLY CLEANED.

KEEP OUT OF THE REACH OF CHILDREN.

SECTION X - TRANSPORTATION DATA

DOT PROPER SHIPPING NAME

NONE

DOT HAZARD CLASS: N/A

DOT LABEL/PLACARD: NONE TT I.D. NUMBER : N/A

🛁'A TSCA CHEMICAL INVENTORY - ALL INGREDIENTS ARE LISTED

EPA CWA 40CFR PART 117 SUBSTANCE(RQ IN A SINGLE CONTAINER):

SODIUM DODECYLBENZENE SULFONATE-1000#.

#### NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This / information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable is regulations for disposal of wastes. We request that you take the time to discard any previous Material. Safety Data Sheets for this product so that your files remain up-to-date.

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

#### ABBREVIATIONS USED IN THE MSDS: 1

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR; Carcinogen-Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible-At temperatures between 100°F; and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive-Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

FBL: Flammable-At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation-A primary route of exposure through breathing of vapors (see below).

IRR: Irritant--Causes reversible effects in living tissues (e.g. Inflammation).

IRR: Irritant--Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable--Category is not appropriate for this product.

N/D: Not Determined--Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit--The time-weighted-average exposure value established by OSHA for repeated exposure during and 8 hours per day 5 days per week without adverse offects. any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value-A time-weighted-average exposure value established by the ACGIH for the work period described. under PEL, above.

TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This timeweighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. "The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without... adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry-this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalizedsystemic or specific-organ toxic effect. awa da ka Elabaka kwa k

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous... DO NOT pressurize, cut, weld, braze, solder, drill, 🗼 grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

#### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.



#### AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 1 OF 3

> 90

ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS DATE

: 09/10/87

ZEP SCENT-ETTE

75

SUPERSEDES: 05/09/86 PRODUCT NUMBER: 1747

SECTION I - EMERGENCY CONTACTS

ZEP MANUFACTURING COMPANY NON-OFFICE HOURS, WEEKENDS, AND HOLIDAYS:AREA CODE 404 P.O. BOX 2015 ATLANTA, GEORGIA 30301

435-2973, 996-0899, 252-1587, 351-2952, 971-3367

TRANSPORTATION EMERGENCY

TELEPHONE (404)352-1680

(EASTERN TIME ZONE)

BETWEEN 8:00A.M.-5:00P.M. CHEMTREC: TOLL FREE 1-800-424-9300 ALL CALLS RECORDED DISTRICT OF COLUMBIA (202)483-7616 ALL CALLS RECORDED

SECTION II - H A Z A R D O U S I N G R E D I E N T S

DESIGNATIONS

TLV EFFECTS % IN (PPM) (SEE REVERSE) PROD. TOX IRR CBL

\*\* PARADICHLOROBENZENE \*\* 1,4-DICHLOROBENZENE; PARA CRYSTALS; P-DICHLOROBENZENE; CAS# 106-46-7; RTECS#

CZ4550000; OSHA PEL 75PPM

SPECIAL NOTE: ADVERSE HEALTH EFFECTS WOULD NOT BE EXPECTED UNDER RECOMMENDED CONDITIONS OF USE SO LONG AS PRESCRIBED SAFETY PRECAUTIONS ARE PRACTICED.

SECTION III - HEALTH HAZARD DATA

ACUTE EFFECTS OF OVEREXPOSURE:

INHALATION OF VAPOR CAN CAUSE CENTRAL NERVOUS SYSTEM DEPRESION CHARACTERIZED BY HEADACHE, DIZZINESS, NAUSEA, STUPOR, UNCONSCIOUSNESS, AND IN EXTREME CASES, DEATH. VAPORS MAY ALSO PRODUCE EYE, NOSE, AND THROAT IRRITATION. CARDIAC INSITIZATION MAY LEAD TO HEART RHYTHM DISORDERS IN SOME INDIVIDUALS. ≒NGREDIENTS IN THIS PRODUCT MAY AGGRAVATE EXISTING SKIN, EYE, AND RESPIATORY DISORDERS.

#### NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your liles remain up-to-date.



By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

#### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen—Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive—Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL: Flammable-At temperatures under 100°F,, chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more:

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation-A primary route of exposure through breathing of vapors (see below).

IRR: Irritant-Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable-Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below),

TLV: Threshold Limit Value—A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the ESTD PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time-weighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

#### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.



#### AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 2 OF 3

ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS

: 09/10/87 ZEP SCENT-ETTE DATE

SUPERSEDES: 05/09/86 PRODUCT NUMBER: 1747

SECTION III - HEALTH HAZARD DATA (CONTINUED)

CHRONIC EFFECTS OF OVEREXPOSURE:

ANIMALS STUDIES INDICATE A POTENTIAL FOR LIVER AND KIDNEY DAMAGE. RELEVANCE OF THESE STUDIES OR EXPOSURE LEVELS WHICH MIGHT PRODUCE THESE EFFECTS IN HUMANS HAS NOT BEEN ESTABLISHED.

NONE OF THE INGREDIENTS ARE LISTED AS CARCINOGENS BY IARC, NTP, OR OSHA.

ESTID PELITLY: 75 PPM PRIMARY ROUTES OF ENTRY: INH.

HMIS CODES: HEALTH 2; FLAM. 2; REACT. 0; PERS. PROTECT. B ; CHRONIC HAZ. YES

FIRST AID PROCEDURES:

SKIN : FLUSH CONTAMINATED SKIN WITH PLENTY OF WATER. CONSULT A PHYSICIAN IF IRRITATION DEVELOPS.

: IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, OC-CASIONALLY LIFTING UPPER AND LOWER LIDS. GET MEDICAL ATTENTION AT ONCE.

INHALE: MOVE EXPOSED PERSON TO FRESH AIR AT ONCE, IF BREATHING HAS STOPPED, PER-FORM ARTIFICIAL RESPIRATION. GET MEDICAL ATTENTION IMMEDIATELY.

INGEST: IF THIS PRODUCT IS SWALLOWED, DO NOT INDUCE VOMITING. IF VICTIM IS

CONSCIOUS GIVE PLENTY OF WATER TO DRINK. GET MEDICAL ATTENTION AT ONCE.

SECTION IV - SPECIAL PROTECTION INFORMATION

PROTECTIVE CLOTHING : THE USE OF NEOPRENE, NITRILE OR NATURAL RUBBER GLOVES IS STRONGLY RECOMMENDED, ESPECIALLY FOR PROLONGED CONTACT.

: USE OF TIGHT-FITTING SAFETY GLASSES OR GOGGLES IS STRON-EYE PROTECTION GLY RECOMMENDED, ESPECIALLY WHEN WEARING CONTACT LENSES.

RESPIRATORY PROTECTION: NO SPECIAL MEASURES ARE REQUIRED.

VENTILATION : NO SPECIAL MEASURES ARE REQUIRED.

SECTION V - PHYSICAL DATA

BOILING POINT (F) : 1750 \* 1.458 SPECIFIC GRAVITY PERCENT VOLATILE BY VOLUME (%) : 100 VAPOR PRESSURE(MMHG): 0.6 MMHG

VAPOR DENSITY(AIR=1): 5.08 EVAPORATION RATE(BUTYL ACETATE =1): <1.0

PH(USE DILUTION OF SOLUBILITY IN WATER : 0.069% PH(CONCENTRATE) : NZA ): N/A

APPEARANCE AND ODOR : WHITE CRYSTALLINE BLOCK IN A CONTAINER/"MOTH BALL" AROMA.

SECTION VI - FIRE AND EXPLOSION DATA

HASH POINT(F) (METHOD USED): 150 (TOC )

FLAMMABLE LIMITS LEL N/A UEL N/A

EXTINGUISHING MEDIA : FOAM, CO2, DRY CHEMICAL

SPECIAL FIRE FIGHTING: WEAR SELF-CONTAINED POSITIVE PRES. BREATHING APPARATUS.

UNUSUAL FIRE HAZARDS : MAY DECOMPOSE TO FORM TOXIC/CORROSIVE GASES

#### NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable \ regulations for disposal of wastes. We request that you take the time to discard any previous Material. Safety Data Sheets for this product so that your files remain up-to-date.

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910/1200) and may be interpreted as follows:

#### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen-Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA),

CBL: Combustible-At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive-Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL: Flammable—At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below)....

INH: Inhalation—A primary route of exposure through breathing of vapors (see below).

IRR: Irritant-Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable—Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.
PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

Ti.V: Threshold Limit Value-A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.
TOX: Toxic—The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This timeweighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry-this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalizedsystemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

#### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.  $\frac{1}{2} \left( \frac{1}{2} \left$ 



#### AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 3 OF 3

ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS DATE

: 09/10/87 ZEP SCENT-ETTE

SUPERSEDES: 05/09/86 PRODUCT NUMBER: 1747

SECTION VII - REACTIVITY DATA

STABILITY

: STABLE

INCOMPATIBILITY(AVOID) : HEAT, OPEN FLAME, SPARK, AND OXIDIZING AGENTS

POLYMERIZATION : WILL NOT OCCUR

HAZARDOUS DECOMPOSITION: CARBON DIOXIDE, CARBON MONOXIDE, HYDROGEN CHLORIDE, AND

SMALL AMOUNTS OF PHOSGENE & CHLORINE GAS.

SECTION VIII - S P I L L A N D D I S P Q S A L P R Q C E D U R E S

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: OBSERVE SAFETY PRECAUTIONS IN SECTIONS 4 & 9 DURING CLEAN-UP. PICK UP SPILLED MATERIAL AND PLACE IN A SUITABLE WASTE CONTAINER. WASH AREA THOROUGHLY WITH A DETERGENT SOLUTION AND RINSE AREA WELL WITH WATER.

WASTE DISPOSAL METHOD:

PRODUCT IS NOT CONSIDERED A HAZARDOUS WASTE UNDER RCRA. UNUSABLE MATERIAL SHOULD BE DRUMMED AND TAKEN TO A CHEMICAL OR INDUSTRIAL LANDFILL, OR IF PERMIT-TED PUT INTO SOLUTION WITH WATER AND FLUSHED INTO A SANITARY SEWER. NEUTRAL-IZATION OF PH MAY BE A PREREQUISITE FOR SEWER DISPOSAL. CONSULT LOCAL, STATE, AND FEDERAL AGENCIES FOR PROPER METHOD OF DISPOSAL IN YOUR AREA.

RCRA HAZ. WASTE NOS.: N/A

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN WHEN HANDLING AND STORING:

COMBUSTIBLE! STORE AND USE AWAY FROM HEAT, SPARKS, OPEN FLAME, OR ANY SOURCE OF IGNITION.

CLOSE CONTAINER TIGHTLY WHEN NOT IN USE, STORE AWAY FROM SUN AND HEAT.

KEEP PRODUCT AWAY FROM SKIN AND EYES.

CLOTHING OR SHOES WHICH BECOME CONTAMINATED WITH SUBSTANCE SHOULD BE REMOVED PROMPTLY AND NOT REWORN UNTIL THOROUGHLY CLEANED.

KEEP OUT OF THE REACH OF CHILDREN.

SECTION X - TRANSPORTATION DATA

DOT PROPER SHIPPING NAME

NONE

DOT HAZARD CLASS: N/A

T I.D. NUMBER : N/A DOT LABEL/PLACARD: NONE

≒'A TSCA CHEMICAL INVENTORY - ALL INGREDIENTS ARE LISTED

EPA CWA 40CFR PART 117 SUBSTANCE(RQ IN A SINGLE CONTAINER): NONE

#### NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.

s e s

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

#### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen—Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F,, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive-Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL: Flammable-At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation-A primary route of exposure through breathing of vapors (see below).

tRR: Irritant-Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable—Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit-The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value—A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the ESTD PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time-weighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, If you have any questions.

#### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.



#### AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 1 OF 3

ZEP MANUEACTURING COMPANY ST IN MAINTENANCE PRODUCTS DATE

: 09/10/87

ZEP BOWLETTE

SUPERSEDES: 02/28/87

PRODUCT NUMBER: 1751

SECTION I - E M E R G E N C Y C O N T A C T S

P.O. BOX 2015 ATLANTA, GEORGIA 30301

ZEP MANUFACTURING COMPANY NON-OFFICE HOURS, WEEKENDS, AND HOLIDAYS: AREA CODE 404 435-2973, 996-0899, 252-1587, 351-2952, 971-3367 

TELEPHONE (404)352-1680

TRANSPORTATION EMERGENCY

(EASTERN TIME ZONE)

BETWEEN 8:00A.M.-5:00P.M. CHEMTREC: TOLL FREE 1-800-424-9300 ALL CALLS RECORDED DISTRICT OF COLUMBIA (202)483-7616 ALL CALLS RECORDED

SECTION II - H A Z A R D O U S I N G R E D I E N T S

DESIGNATIONS

TLV EFFECTS.

% IN (PPM) (SEE REVERSE) PROD.

\*\* PARADICHLOROBENZENE \*\* 1,4-DICHLOROBENZENE; PARA CRYSTALS; P-DICHLOROBENZENE; CAS# 106-46-7; RTECS#

75 TOX IRR CBL > 90

CZ4550000; OSHA PEL 75PPM

SPECIAL NOTE: ADVERSE HEALTH EFFECTS WOULD NOT BE EXPECTED UNDER RECOMMENDED CONDITIONS OF USE SO LONG AS PRESCRIBED SAFETY PRECAUTIONS ARE PRACTICED.

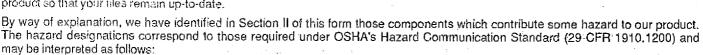
SECTION III - H E A L T H HAZARD DATA

ACUTE EFFECTS OF OVEREXPOSURE:

INHALATION OF VAPOR CAN CAUSE CENTRAL NERVOUS SYSTEM DEPRESION CHARACTERIZED BY HEADACHE, DIZZINESS, NAUSEA, STUPOR, UNCONSCIOUSNESS, AND IN EXTREME CASES, DEATH. VAPORS MAY ALSO PRODUCE EYE, NOSE, AND THROAT IRRITATION. CARDIAC 'NSITIZATION MAY LEAD TO HEART RHYTHM DISORDERS IN SOME INDIVIDUALS. FAGREDIENTS IN THIS PRODUCT MAY AGGRAVATE EXISTING SKIN, EYE, AND RESPIATORY DISORDERS.

#### NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.



#### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen—Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive-Causes irreversible atterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Éstimated.

FBL: Flammable—At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation-A primary route of exposure through breathing of vapors (see below).

IRR: Irritant-Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable-Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Gauses allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value-A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic—The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time-weighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safety if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

#### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.



#### AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 2 OF 3

ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS DATE : 09/10/87 ZEP BOWLETTE

SUPERSEDES: 02/28/87 PRODUCT NUMBER: 1751

SECTION III - H E A L T H H A Z A R D D A T A (CONTINUED)

CHRONIC EFFECTS OF OVEREXPOSURE:

ANIMALS STUDIES INDICATE A POTENTIAL FOR LIVER AND KIDNEY DAMAGE. RELEVANCE OF THESE STUDIES OR EXPOSURE LEVELS WHICH MIGHT PRODUCE THESE EFFECTS IN HUMANS HAS NOT BEEN ESTABLISHED.

NONE OF THE INGREDIENTS ARE LISTED AS CARCINOGENS BY IARC, NTP, OR OSHA.

EST'D PEL/TLV: 75 PPM PRIMARY ROUTES OF ENTRY: INH.

HMIS CODES: HEALTH 2; FLAM. 2; REACT. 0; PERS. PROTECT. B ; CHRONIC HAZ. YES

FIRST AID PROCEDURES:

SKIN : FLUSH CONTAMINATED SKIN WITH PLENTY OF WATER. CONSULT A PHYSICIAN IF IRRITATION DEVELOPS.

EYES : IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, OC-CASIONALLY LIFTING UPPER AND LOWER LIDS. GET MEDICAL ATTENTION AT ONCE.

INHALE: MOVE EXPOSED PERSON TO FRESH AIR AT ONCE. IF BREATHING HAS STOPPED, PER-

FORM ARTIFICIAL RESPIRATION, GET MEDICAL ATTENTION IMMEDIATELY.

INGEST: IF THIS PRODUCT IS SWALLOWED, DO NOT INDUCE VOMITING. IF VICTIM IS

CONSCIOUS GIVE PLENTY OF WATER TO DRINK. GET MEDICAL ATTENTION AT ONCE.

SECTION IV - S P E C I A L P R O T E C T I O N I N F O R M A T I O N

PROTECTIVE CLOTHING : THE USE OF NEOPRENE, NITRILE OR NATURAL RUBBER GLOVES IS STRONGLY RECOMMENDED, ESPECIALLY FOR PROLONGED CONTACT.

EYE PROTECTION : USE OF TIGHT-FITTING SAFETY GLASSES OR GOGGLES IS STRON-

GLY RECOMMENDED, ESPECIALLY WHEN WEARING CONTACT LENSES.

RESPIRATORY PROTECTION: NO SPECIAL MEASURES ARE REQUIRED.

VENTILATION : NO SPECIAL MEASURES ARE REQUIRED.

SECTION V - PHYSICAL DATA

BOILING POINT (F) : 1750 SPECIFIC GRAVITY : 1.458

VAPOR DENSITY(AIR=1): 5.08

STECIFIC ORNALLI
STECIFIC ORN

SOLUBILITY IN WATER : 0.069% PH(CONCENTRATE) : N/A

PH(USE DILUTION OF ): N/A

APPEARANCE AND ODOR : WHITE CRYSTALLINE BLOCK IN A CONTAINER/"MOTH BALL" AROMA. 

SECTION VI - FIRE AND EXPLOSION DATA

-LASH POINT(F) (METHOD USED): 150F (TCC)

FLAMMABLE LIMITS LEL N/A UEL N/A

EXTINGUISHING MEDIA : CO2, FOAM, DRY CHEMICAL

SPECIAL FIRE FIGHTING: WEAR SELF-CONTAINED POSITIVE PRES. BREATHING APPARATUS.

UNUSUAL FIRE HAZARDS : MAY DECOMPOSE TO FORM TOXIC/CORROSIVE GASES

#### NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This, information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable. regulations for disposal of wastes. We request that you take the time to discard any previous Material. Safety Data Sheets for this product so that your files remain up-to-date.

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910:1200) and may be interpreted as follows:

#### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial, Hygienists.

CAR: Carcinogen-Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive-Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL: Flammable—At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 lbs) man is one teaspoonful or more.

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation—A primary route of exposure through breathing of vapors (see below).

IRR: Irritant–Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable—Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for this item,

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit-The time-weighted-average exposure value established by OSHA for repeated exposure during

any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer—Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value—A time-weighted-average exposure value established by the ACGIH for the work period described. under PEL, above. TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the ESTD PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This timeweighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without in the conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without in the conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without in the conditions are conditioned as the conditioned as the conditioned are condition adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry-this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalizedsystémic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and 🖟 the Material Satety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

#### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.



#### AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 3 OF 3

ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS DATE

: 09/10/87 ZEP BOWLETTE

SUPERSEDES: 02/28/87 PRODUCT NUMBER: 1751

SECTION VII - REACTIVITY DATA

STABILITY

: STABLE

INCOMPATIBILITY(AVOID) : HEAT, OPEN FLAME, SPARK, AND OXIDIZING AGENTS

POLYMERIZATION : WILL NOT OCCUR

HAZARDOUS DECOMPOSITION: CARBON DIOXIDE, CARBON MONOXIDE, HYDROGEN CHLORIDE, AND

SMALL AMOUNTS OF PHOSGENE & CHLORINE GAS.

SECTION VIII — SPILL AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: OBSERVE SAFETY PRECAUTIONS IN SECTIONS 4 % 9 DURING CLEAN-UP. PICK UP SPILLED MATERIAL AND PLACE IN A SUITABLE WASTE CONTAINER. WASH AREA THOROUGHLY WITH A DETERGENT SOLUTION AND RINSE AREA WELL WITH WATER.

WASTE DISPOSAL METHOD:

PRODUCT IS NOT CONSIDERED A HAZARDOUS WASTE UNDER RCRA. UNUSABLE MATERIAL SHOULD BE DRUMMED AND TAKEN TO A CHEMICAL OR INDUSTRIAL LANDFILL, OR IF PERMIT-TED PUT INTO SOLUTION WITH WATER AND FLUSHED INTO A SANITARY SEWER. NEUTRAL-IZATION OF PH MAY BE A PREREQUISITE FOR SEWER DISPOSAL. CONSULT LOCAL, STATE, AND FEDERAL AGENCIES FOR PROPER METHOD OF DISPOSAL IN YOUR AREA.

RCRA HAZ. WASTE NOS.: N/A

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN WHEN HANDLING AND STORING:

COMBUSTIBLE! STORE AND USE AWAY FROM HEAT, SPARKS, OPEN FLAME, OR ANY SOURCE OF IGNITION.

CLOSE CONTAINER TIGHTLY WHEN NOT IN USE. STORE AWAY FROM SUN AND HEAT.

CLOTHING OR SHOES WHICH BECOME CONTAMINATED WITH SUBSTANCE SHOULD BE REMOVED PROMPTLY AND NOT REWORN UNTIL THOROUGHLY CLEANED.

KEEP PRODUCT AWAY FROM SKIN AND EYES.

KEEP OUT OF THE REACH OF CHILDREN.

SECTION X - TRANSPORTATION DATA

DOT PROPER SHIPPING NAME

NONE

DOT HAZARD CLASS: N/A

DOT LABEL/PLACARD: NONE T I.D. NUMBER : N/A

► A TSCA CHEMICAL INVENTORY - ALL INGREDIENTS ARE LISTED

EPA CWA 40CFR PART 117 SUBSTANCE(RQ IN A SINGLE CONTAINER): NONE

Appendix33-000441

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable \ regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

#### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen-Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant,

COR: Corrosive-Causes irreversible alterations in living tissue (e.g. burns),

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Éstimated.

FBL: Flammable–At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation—A primary route of exposure through breathing of vapors (see below).

IRR: Irritant-Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable-Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit-The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value-A time-weighted-average exposure value established by the ACGIH for the work period described. under PEL, above.

TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the ESTD PELALV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This timeweighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry-this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalizedsystemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

#### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.

# MATERIALES AFETY BATTA #5 HEETT

```
EM SCIENCE
                                              Preparation Date .....: OCT_27, '87
. A Division of EM Industries
 111 Woodcrest
                                               Information Phone Number .:
                                              Chemtrec Emergency Number: 1-800-424-9300
 Cherry Hill, N.J. 08034-0395
                                                                NFPA HAZARD RATINGS
                                                Health ...: 2 Flammability ...: 3
Reactivity: 0 Special Hazards.: N
                                                                          Special Hazards.: N/A
                                  SECTION I - GENERAL INFORMATION
                                                                                        TX0737
                                                             TX0735P TX0735S
   Catalog Number(s):
TX0745 TX075
                                  TX0734
                                               TX0735
                     TX0750
   Chemical Name...: Toluene
Trade Name....: Toluol, Methylbenzene
C.A.S. Number...: 108-88-3
   SECTION II - HAZARDOUS INGREDIENTS
    -None other than specified product
                                     SECTION III - PHYSICAL DATA
   Boiling Point (C 760 mm Hg): 110.8C
Melting Point (C).......95C
Specific Gravity(H20 = 1)...: 0.866
Vapor Pressure..(mm Hg)....: 21.86 20
Percent Volatile by Vol (%)...: 99+%
Vapor Density (Air=1)....: 3.2
Evaporation Rate (BuAc=1)...: 2.24
Solubility in Water (%)...: insoluble
Appearance and Odor.....: clear.col
                                                         20C
   Appearance and Odor...... clear, colorless liquid
       aromatic odor
                               SECTION IV - FIRE & EXPLOSION HAZARD DATA
   Flash Point (F).....: 40F (tcc)
Flammable Limits LEL %: 1.3
Flammable Limits UEL %: 7.1
   Extinguishing Media...:
C02, Dry chemical, Foam
   Water spray to cool exposed containers
Fire Fighting Proc....:
              self-contained breathing apparatus; see Section 10
       Wear
   Fire & Expl. Hazards.
       -Vapor can travel distance to ignition source and flash back
                 SECTION V - HEALTH HAZARD DATA (ACUTE AND CHRONIC)
   ACGIH TLV/OSHA PEL (TWA).....:
       100 ppm (TWA)
   or1-rat LD50: 5000 mg/kg
   Symptoms of Exposure .....:
-Harmful or fatal if swallowed
Vapor harmful if inhaled
       Symptoms: headache, dizziness, nausea, diarrhea, respiratory irritation, central nervous system depression, unconsciousness,
           liver, kidney and lung damage
       Contact can cause severe eye irritation
   May cause skin irritation
               breathing has stopped
                                     SECTION VI - REACTIVITY DATA
   Stability....: YES Conditions to Avoid ....:
   -Heat; contact with ignition source
Materials to Avoid.....: ( ) Water ( )
( ) Bases ( ) Corrosives (X) Oxidizers
(X) Other (specify)-Strong mineral acids
Hazardous Polymerization.: Data not available.
                                                               ( ) Acids
```

THE PROPERTY OF THE PARTY OF TH Hazardous Decomposition..: -CDx. HydrocarLons 1 3 7 3 4 5

SECTION VII - ENVIRONMENTAL PROTECTION PROCEDURES

Spill Response:

-Eliminate ignition sources; take up with absorbent

Containerize for proper disposal
Waste Disposal: To be performed in compliance with all current local,
state and federal regulations.

SECTION VIII - SPECIAL PROTECTION INFORMATION

Ventilation, Respiratory Protection, Protective Clothing, Eye Protection:
-Material should be handled or transferred in an approved fume
hood or with adequate ventilation
Protective gloves (Viton, Polyurethane, or equivalent) should be
worn to prevent skin contact
Safety glasses with side shields should be worn at all times

SECTION IX - SPECIAL PROTECTION INFORMATION .

Handling & Storage ....:
-Keep container closed

Store in a cool area away from ignition sources and oxidizers

Do not breathe vapor

Do not get in eyes, on skin or on clothing Do not take internally

Retained residue may make empty containers hazardous; use caution! Work/Hygienic Practices: Wash thoroughly after handling. Do not take internally. Eye wash and safety equipment should be readily available.

SECTION X - OTHER INFORMATION

Comments...

Rev. 5/87

THE PROPERTY OF THE PARTY OF TH

Revision History..... ....: 08/01/81, N/A OCT 27, '87

N/A = Not available:

#### FOR COATINGS , RESINS AND RELATED MATERIALS

DATE OF FREFARATION-12/10/87

MANUFACTURER'S NAME : RODDA PAINT COMPANY

ADDRESS :

CITY, STATE : 6932 S.W. MACADAM AVENUE

PORTLAND, OREGON 97219

EMERGENCY TELEPHONE NO. DAY: (503) 244-7512 NIGHT: (503) 645-5642 INFORMATION TELEPHONE NO. DAY: (503) 244-7512 NIGHT: (503) 645-5642

TO THE OWN COLD THE COLD THE OWN COLD THE OWN COLD THE OWN COLD THE COLD TH

SECTION I -- PRODUCT IDENTIFICATION 

MANUFACTURER'S CODE IDENTIFICATION: 461

PRODUCT CLASS: THINNER

TRADE NAME: LACQUER THINNER

HMIS INFORMATION \*\* HEALTH- 2 FLAMMABILITY- 3

REACTIVITY- 0 PERSONAL PROTECTIVE EQUIPMENT- H

SECTION II HAZARDOUS INGREDIENTS

CARCINGGENICITY: THE MATERIALS IN THIS PRODUCT HAVE NOT BEEN LISTED BY NTF.

IARC, OR OSHA AS CARCINOGENIC.

VAPOR
PRESSURE 1HG @48DF
70.00
186.00
+60
97.00
40.00
22.00
6.00
50.00
1

#### SECTION III PHYSICAL DATA

BOILING RANGE HIGH 343.0 LOW 133.0
VAPOR PRESSURE 186.00
VAPOR DENSITY HEAVIER THAN AIR
EVAPORATION RATE FASTER THAN BUTYL ACETATE
WEIGHT PER GALLON 6.61
% VOLATILE BY VOLUME 99.99
% VOLATILE BY WEIGHT 100.00

APPEARANCE-ODOR- CLEAR LIQUID

564839 41040 461

PAGE 1

SECTION IV -- FIRE AND EXPLOSION HAZARD DATA FLAMMABILITY CLASSIFICATION OSHA-CLASS IR DOT- FLAMMABLE LIQUID LOWEST FLASHPOINT T.C.C. .9 LOWER EXPLOSION LEVEL (LEL) 1.0

EXTINGUISHING MEDIA: (Yes)-FOAM (Yes)-ALCOHOL FOAM (Yes)-Co2 (Yes)-DRY CHEMICAL (Yes)-WATER FOO (N/A)-OTHER Blanket fire with one of the above extinguishing media. UNUSAL FIRE AND EXPLOSION HAZARDS: Vapors are heavier than air and may travel along the ground or be moved by ventilation and ignited by heat, pilot lights, other flames and ignition sources at locations distant from material handling point. Never use welding or cutting torch on or near drum (even empty) because product (just residue) can ignite EXFLOSIVELY! SPECIAL FIRE FIGHTING PROCEDURES: For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment. Self-contained breathing apparatus with a full facepiece operated in pressure-demand or other positive pressure mode to protect against the hazardous effects of normal products of combustion or oxygen deficiency.

SECTION V --- HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE: FOR PRODUCT-EYES: Can cause irritation, redness, tearing, blurred vision. SKIN:Prolonged or repeated contact can cause moder ate irritation, defatting, dermatitis. F": MARY ROUTE(S) OF ENTRY: (Yes) - DERMAL (Yes) - INHALATION (Yes) - INGESTION backATHING: Excessive breathing of vapors can cause masal and respiratory irritation, dizziness, weakness, fatigue, nausea, headache, possible unconsciousness, and even asphyxiation. SWALLOWING: Can cause gastrointestinal irritation, nausea, vomiting, and diarrhea. Aspiration of material into lungs can cause chemical pneumonitis which can be fatal. EMERGENCY & FIRST AID PROCEDURES: SKIN- Wash exposed area with soap & water EYES-Flush with large amounts of water. INGESTION- Do not induce vomitingget medical attention! INHALATION-If, affected, remove to fresh air. If breathing is difficult, administer oxygen. If breathing has stopped, give artificial respiration. Get medical attention. MEDICAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE: None known.

SECTION VI -- REACTIVITY DATA

STABILITY: ( )-UNSTABLE (Yes)-STABLE HAZARDOUS POLYMERIZATION ( )-MAY OCCUR (XXX)- WILL NOT OCCUR HAZARDOUS BECOMPOSITION PRODUCTS- Normal combustion forms carbon dioxide & water vapor; incomplete combustion can produce carbon monoxide. CONDITIONS TO AVOID-Excessive temperatures. INCOMPATIBILITY (MATERIALS TO AVOID) - Strong oxidizing agents (Nitric Acid. Permanganates, MEK Peroxide, Etc.) 🐰

SECTION VII SPILL OR LEAK PROCEDURES STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Eliminate all dition sources (flares, flames including pilot lights & electrical

WASTE DISPOSAL METHOD- Destroy by liquid incineration. Material collected on absorbent material may be deposited in an approved toxic substance tandfill in accordance with Local, state, and federal regulations.

SECTION VIII-- SAFE HANDLING AND USE INFORMATION

RESPIRATORY PROTECTION: If TLV of the product or any component is exceeded. a NIOSH/MESA jointly approved self-contained breathing apparatus with a full face piece operated in pressure demand or other positive pressure mode is advised; however, OSHA regulations also permit other NIOSH/MESA respirators under specified conditions. (See your safety equipment supplier). VENTILATION: Provide sufficient mechanical and/or local exhaust to maintain exposure below TLV(s).

EYE PROTECTION: Chemical splash goggles in compliance with OSHA regulations are advised.

PROTECTIVE GLOVES: Wear resistant gloves such as:, BUNA-N.
OTHER PROTECTIVE EQUIPMENT: To prevent repeated or prolonged skin contact.
wear impervious clothing and boots.

HYGENIC PRACTICES: Wash hands before eating or using washroom.

#### SECTION IX-- SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in a cool, dry area. Keep away from heat, sparks, and open flame. Keep containers closed when not in use. Use only with adequate ventilation.

OTHER PRECAUTIONS: Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in this data sheet must be observed.

READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL!

#### FOR COATINGS , RESINS AND RELATED MATERIALS

DATE OF PREPARATION-12/10/87	PAGE 1
MANUFACTURER'S NAME : RODDA PAINT COMPANY ADDRESS :	
ADDRESS : 6932 S.W. MACADAM AVENUE CITY,STATE : PORTLAND, OREGON 97219	
EMERGENCY TELEPHONE NO. DAY: (503) 244-7512 NIGHT: (503) 645-5642 INFORMATION TELEPHONE NO. DAY: (503) 244-7512 NIGHT: (503) 645-5642	era - 1664 televi pere 1550 televi pete 1000 televi
SECTION I PRODUCT IDENTIFICATION	
MANUFACTURER'S CODE IDENTIFICATION: 1753 — PRODUCT CLASS: ALKYD ENAMEL TRADE NAME: ALL PURPOSE EQUIPMENT ENAMEL—GRAY HMIS INFORMATION ** HEALTH— 2 FLAMMABILITY— 2 REACTIVITY— 0 PERSONAL PROTECTIVE EQUIPMENT— H	
SECTION 11 HAZARDOUS INGREDIENTS	
CARCINOGENICITY: THE MATERIALS IN THIS PRODUCT HAVE NOT BEEN LISTED BY IARC, OR OSHA AS CARCINOGENIC.	NTF.
INGREDIENT X BY TLV-(TWA) MATERIAL DESCRIPTION CAS# WEIGHT FFM MG/M3 LEL	VAPOR PRESSURE
ALKYD RESIN SOLUTION   ,   50 - 100   100.00  525.00  1.0	1 .10
MONTMORILLONITE   171011-26-2 ,   .5 - 5   NOT EST  5.00	1
RUTILE TITANIUM DIOXIDE  13463-67-7   5 - 10  NOT EST  10.00	1
ALUMINUM SILICATE   1332-58-7 ,   10 - 15   NOT EST  10.00	<b>}</b>
ALIPHATIC HYDROCARBON   164742-88-7 ,   5 - 10   125.00 NOT EST  1.0	1 .10
6% CALCIUM DRIER   .1.5 - 5   200.00 NOT EST  .9	
SECTION III PHYSICAL DATA	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
BOILING RANGE HIGH 384.0 LOW 310.0 VAPOR PRESSURE .10 VAPOR DENSITY HEAVIER THAN AIR EVAPORATION RATE SLOWER THAN BUTYL ACETATE WEIGHT PER GALLON 8.62	
% VOLATILE BY VOLUME 58.60 % VOLATILE BY WEIGHT 44.60	
APPEARANCE-ODOR- GRAY LIQUID . James	1931 DOOR 1800 STAT SBOO THEY THO AND 604
The state of the s	

SECTION IV -- FIRE AND EXPLOSION HAZARD DATA
FLAMMABILITY CLASSIFICATION OSHA-CLASS II DOT- COMBUSTIBLE LIQUID
LOWEST FLASHPOINT T.C.C. 100.0 LOWER EXPLOSION LEVEL (LEL) .9

EXTINGUISHING MEDIA: (Yes)-FOAM (Yes)-ALCOHOL FOAM (Yes)-CO2

(Yes)-DRY CHEMICAL (Yes)-WATER FOG (N/A)-OTHER

Blanket fire with one of the above extinguishing media.

UNUSAL FIRE AND EXPLOSION HAZARDS: Vapors are heavier than air and may travel along the ground or be moved by ventilation and ignited by heat, pilot lights, other flames and ignition sources at locations distant from material handling point. Never use welding or cutting torch on or near drum (even empty) because product (just residue) can ignite EXPLOSIVELY!

SPECIAL FIRE FIGHTING PROCEDURES:For, fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment. Self-contained breathing apparatus with a full facepiece operated in pressure-demand or other positive pressure mode to protect against the hazardous effects of normal products of combustion or oxygen deficiency.

#### SECTION V -- HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE: FOR PRODUCT-EYES: Can cause irritation, redness, tearing, blurred vision. SKIN: Frotonged or repeated contact can cause moder ate irritation, defatting, dermatitis.

F \*\*MARY ROUTE(S)\*\* OF ENTRY: (Yes)-BERMAL (Yes)-INHALATION (Yes)-INGESTION FrofATHING: Excessive breathing of vapors can cause masal and respiratory

Excessive breathing of vapors can cause nasal and respiratory irritation, dizziness, weakness, fatigue, nausea, headache, possible unconsciousness, and even asphyxiation. SWALLOWING: Can cause gastrointestinal irritation, nausea, vomiting, and diarrhea. Aspiration of material into lungs can cause chemical pneumonitis which can be fatal.

EMERGENCY & FIRST AID PROCEDURES: SKIN- Wash exposed area with soap & water EYES-Flush with large amounts of water. INGESTION- Do not induce vomitingget medical attention! INHALATION-If, affected, remove to fresh air. If breathing is difficult, administer oxygen. If breathing has stopped, give artificial respiration. Get medical attention.

MEDICAL CONDITIONS PROME TO AGGRAVATION BY EXPOSURE: None known.

#### SECTION VI - REACTIVITY DATA

STABILITY: ( )-UNSTABLE (Yes)-STABLE
HAZARDOUS POLYMERIZATION ( )-MAY OCCUR (XXX)- WILL NOT OCCUR
HAZARDOUS DECOMPOSITION PRODUCTS- Normal combustion forms carbon dioxide &
water vapor; incomplete combustion can produce carbon monoxide.
CONDITIONS TO AVOID-Excessive temperatures.
INCOMPATIBILITY (MATERIALS TO AVOID)- Strong oxidizing agents (Nitric Acid.
Permanganates, MEK Peroxide, Etc.) 4

#### SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Eliminate all lition sources (flares, flames including pilot lights & electrical

\_\_\_\_irks). Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop spill at source, dike area of spill to prevent spreading, pump liquid to salvage tank. Remaining liquid may be taken up on sand, clax, earth, floor absorbent, or other absorbent material and shoveled into containers. Prevent run-off to sewers. streams, or other bodies of water.

WASTE DISPOSAL METHOD- Destroy by Liquid incineration. Material collected on absorbent material may be deposited in an approved toxic substance landfill in accordance with Local, state, and federal regulations.

SECTION VIII-- SAFE HANDLING AND USE INFORMATION

RESPIRATORY PROTECTION: If TLV of the product or any component is exceeded. a NIOSH/MESA jointly approved self-contained breathing apparatus with a full face piece operated in pressure demand or other positive pressure mode is advised; however. OSHA regulations also permit other NIOSH/MESA respirators under specified conditions. (See your safety equipment supplier). VENTILATION: Provide sufficient mechanical and/or local exhaust to maintain exposure below TLV(s).

EYE PROTECTION: Chemical splash goggles in compliance with OSHA regulations are advised.

PROTECTIVE GLOVES: Wear resistant gloves such as:, RUNA-N.

OTHER PROTECTIVE EQUIPMENT: To prevent repeated or prolonged skin contact. wear impervious clothing and boots.

HYGENIC PRACTICES: Wash hands before eating or using washroom.

#### SECTION IX-- SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in a cool, dry area. Keep away from heat, sparks, and open flame. Keep containers closed when not in use. Use only with adequate ventilation.

OTHER PRECAUTIONS: Containers of this material may be hazardous when emptied. Since emptied containers restain product residues (vapar, liquid.

OTHER PRECAUTIONS: Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid. and/or solid), all hazard precautions given in this data sheet must be observed.

READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL!

#### FOR COATINGS , RESINS AND RELATED MATERIALS

<del></del>	PAGE	1
MANUFACTURER'S NAME : RODDA PAINT COMPANY ADDRESS :		
ADDRESS : 6932 S.W. MACADAM AVENUE		
CITY, STATE: PORTLAND, OREGON 97219		
EMERGENCY TELEPHONE NO. DAY: (503) 244-7512 NIGHT: (503) 645-5642 INFORMATION TELEPHONE NO. DAY: (503) 244-7512 NIGHT: (503) 645-5642		
SECTION I PRODUCT IDENTIFICATION		
MANUFACTURER'S CODE IDENTIFICATION: 260 - PRODUCT CLASS: THINNER TRADE NAME: SYNTHETIC REDUCER HMIS INFORMATION ** HEALTH- 2 FLAMMABILITY- 2 REACTIVITY- 0 PERSONAL PROTECTIVE EQUIPMENT- H		<b>41 1144 1</b> 441 144
SECTION II HAZARDOUS INGREDIENTS		
CARCINOGENICITY: THE MATERIALS IN THIS PRODUCT HAVE NOT BEEN LISTED BY	NTF.	to Lone belds that
IARC, OR OSHA AS CARCINOGENIC.		
### ### ### ### ### ### ### ### ### ##		 BR
INGREDIENT % BY TLV-(TWA) MATERIAL DESCRIPTION CAS# WEIGHT PPM MG/M3 LEL Mi	VAPO PRESS 1HG 04	SURE SBDF
INGREDIENT % BY TLV-(TWA) MATERIAL DESCRIPTION CAS# WEIGHT PPM MG/M3 LEL	VAPO PRESS 1HG 04	SURE SBDF
INGREDIENT % BY TLV-(TWA) MATERIAL DESCRIPTION CAS¢ WEIGHT PPM MG/M3 LEL Mi	VAPO PRESS 1HG @a	SURE SBDF

SECTION IV -- FIRE AND EXPLOSION HAZARD DATA FLAMMABILITY CLASSIFICATION OSHA-CLASS IC DOT- FLAMMABLE LIQUID LOWEST FLASHPOINT T.C.C. 81.0 LOWER EXPLOSION LEVEL (LEL) 1.0

EXTINGUISHING MEDIA: (Yes)-FOAM (Yes)-ALCOHOL FOAM (Yes)-CO2 (Yes)-DRY CHEMICAL (Yes)-WATER FOG (N/A)-OTHER Blanket fire with one of the above extinguishing media. UNUSAL FIRE AND EXPLOSION HAZARDS: Vapors are heavier than air and may travel along the ground or be moved by ventilation and ignited by heat, pilot lights, other flames and ignition sources at locations distant from material handling point. Never use welding or cutting torch on or near drum (even empty) because product (just mesidue) can ignite EXPLOSIVELY! SPECIAL FIRE FIGHTING PROCEDURES: For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment. Self-contained breathing apparatus with a full facepiece operated in pressure-demand or other positive pressure mode to protect against the hazardous effects of normal products of combustion or oxygen deficiency.

#### SECTION V -- HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE: FOR PRODUCT-EYES: Can cause irritation, redness, tearing, blurred vision. SKIN:Protonged or repeated contact can cause moder ate irritation, defatting, dermatitis.

F TMARY ROUTE(S) OF ENTRY: (Yes)-DERNAL (Yes)-INHALATION (Yes)-INGESTION breathing: Excessive breathing of vapors can cause masal and respiratory irritation, dizziness, weakness, fatigue, nausea, headache, possible unconsciousness, and even asphyxiation. SWALLOWING: Can cause gastrointestinal irritation, nausea, vomiting, and diarrhea. Aspiration of material into lungs can cause chemical pneumonitis which can be fatal.

EMERGENCY & FIRST AID PROCEDURES: SKIN- Wash exposed area with soap & water EYES-Flush with large amounts of water. INGESTION- Do not induce vomitingget medical attention! INHALATION-If affected, remove to fresh air. If breathing is difficult, administer exygen. If breathing has stopped, give artificial respiration. Get medical attention.

MEDICAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE: None known.

#### SECTION VI -- REACTIVITY DATA

STABILITY: ( )-UNSTABLE (Yes)-STABLE HAZARDOUS POLYMERIZATION ( )-MAY QCCUR (XXX)-- WILL NOT OCCUR HAZARDOUS DECOMPOSITION PRODUCTS- Normal combustion forms carbon dioxide & water vapor; incomplete combustion can produce carbon monoxide. CONDITIONS TO AVOID-Excessive temperatures.

INCOMPATIBILITY (MATERIALS TO AVOID) - Strong oxidizing agents (Nitric Acid. Permanganates, MEK Peroxide, Etc.)

#### SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Eliminate all iltion sources (flares, flames including pilot lights & electrical

WASTE DISPOSAL METHOD- Destroy by liquid incineration. Material collected on absorbent material may be deposited in an approved toxic substance landfill in accordance with local, state, and federal regulations.

SECTION VIII-- SAFE HANDLING AND USE INFORMATION

RESPIRATORY PROTECTION: If TLV of the product or any component is exceeded. a NIOSH/MESA jointly approved self-contained breathing apparatus with a full face piece operated in pressure demand or other positive pressure mode is advised; however, OSHA regulations also permit other NIOSH/MESA respirators under specified conditions. (See your safety equipment supplier). VENTILATION: Provide sufficient mechanical and/or local exhaust to maintain exposure below TLV(s).

EYE PROTECTION: Chemical splash goggles in compliance with OSHA regulations are advised.

PROTECTIVE GLOVES: Wear resistant gloves such as:, BUNA-N.
OTHER PROTECTIVE EQUIPMENT: To prevent repeated or prolonged skin contact.
Wear impervious clothing and boots.

HYGENIC PRACTICES: Wash hands before eating or using washroom.

#### SECTION IX-- SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in a cool, dry area. Keep away from heat, sparks, and open flame. Keep containers closed when not in use. Use only with adequate ventilation.

OTHER PRECAUTIONS: Containers of this material may be hazardous when

OTHER PRECAUTIONS: Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in this data sheet must be observed.

READ AND DRSERVE ALL PRECAUTIONS ON PRODUCT LABEL!

#### FOR COATINGS , RESINS AND RELATED MATERIALS

DATE OF PREPARATION-12/17/87	PAGE	1.
MANUFACTURER'S NAME : RODDA PAINT COMPANY		
NODRESS :		
ADDRESS : 6932 S.W. MACADAM AVENUE CITY,STATE : PORTLAND, OREGON 97219		
EMERGENCY TELEPHONE NO. DAY: (503) 244-7512 NIGHT: (503) 645-56 ENFORMATION TELEPHONE NO. DAY: (503) 244-7512 NIGHT: (503) 645-56		
SECTION I PRODUCT IDENTIFICATION	, , , , , , , , , , , , , , , , , , ,	* 1101 3130 984
MANUFACTURER'S CODE IDENTIFICATION: 911 PRODUCT CLASS: EXTERIOR ACRYLIC LATEX PRODUCT CLASS: EXTERIOR ACRYLICATION: WHITE PRODUCT CLASS	С	
SECTION II HAZARDOUS INGREDIENTS		
CARCINOGENICITY: THE MATERIALS IN THIS PRODUCT HAVE NOT BEEN LISTED IARC, OR OSHA AS CARCINOGENIC.	BY NTF.	
INGREDIENT % BY TLV-(TWA) MATERIAL DESCRIPTION CAS# WEIGHT PPM MG/M3 LE		URE
POLYACRYLATE POLYMER     .5 - 5   .50 NOT EST	1 1.7	7.00
.,2-ETHANEDIOL  107-21-1   .5 - 5   50.00  125.00	•	
TITANIUM DIOXIDE   13463-67-7   20 - 25   NOT EST! 10.00	ł	
VEPHELINE SYENITE   137244-96-5   10 - 15   NOT EST! 10.00!	ł	
TATOMACEOUS SILICA   14464-46-1   .5 - 5   NOT EST  5.00	1	
ACRYLIC EMULSION RESIN     25 - 35   25.00 NOT EST!	1 17	7.00
STER ALCOHOL   125265-77-4   .5 - 5   NOT ESTINOT EST!	.61	.01
SECTION III PHYSICAL DATA	*** **** **** **** **** **** **** **** ****	)+ 749+ E4+* P+**
BOILING RANGE HIGH 477.0 LOW 212.0 VAPOR PRESSURE 17.00 VAPOR DENSITY HEAVIER THAN AIR EVAPORATION RATE EQUAL TO BUTYL ACETATE WEIGHT PER GALLON 11.38 % VOLATILE BY VOLUME 62.57 % VOLATILE RY WEIGHT 46.03		

SECTION IV -- FIRE AND EXPLOSION HAZARD DATA LAMMABILITY CLASSIFICATION OSHA-CLASS III-B DOT- NOT REGULATED OWEST FLASHPOINT T.C.C. 241.0 LOWER EXPLOSION LEVEL (LEL) .6

XTINGUISHING MEDIA: ( )-FOAM ( )-ALCOHOL FOAM ( )-WATER FOO ( ₹ >-005 )-OTHER

roduct will not support combustion.

NUSAL FIRE AND EXPLOSION HAZARDS: Product will not burn but may spatter if emperature exceeds boiling point. Dried paint films are capable of burning iving off exides of carbon and/or nitrogen.

PECIAL FIRE FIGHTING PROCEDURES: N/A

#### SECTION V -- HEALTH HAZARD DATA

FFECTS OF OVEREXPOSURE: INHALATION: Adverse health effects from vapors or pray mists in poorly ventilated areas may include irritation of the mucous embranes of the nose, throat, respiratory tract and symptoms of headache nd nauses. SKIN CONTACTY: Prolonged or repeated contact with product may ause skin irritation. EYE CONTACT: Direct contact with product may result n eye irritation.

RIMARY ROUTE(S) OF ENTRY: DERMAL ( ) INHALATION (YES) INDESTION (YES) MERGENCY AND FIRST AID PROCEDURES: EYE AND SKIN CONTACT: Wash myms with lenty of water for 15 minutes and consult physician if irritation persists a: skin thoroughly with soap and water. INHALATION: Remove subject to resh air. INGESTION: If victim is conscious, give two glasses of warm ater to drink. Call a physician.

EDICAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE: NONE KNOWN.

#### SECTION VI --- REACTIVITY DATA

TABILITY: ( )-UNSTABLE (XXX)-STABLE

AZARDOUS POLYMERIZATION ( ->-MAY OCCUR (XXX)-WILL NOT OCCUR

AZARDOUS DECOMPOSITION PRODUCTS: N/A

ONDITIONS TO AVOID: N/A

NCOMPATABILITY MATERIALS TO AVOID: N/A

#### SECTION VII SPILL OR LEAK PROCEDURES

TEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Keep unnecessary cople away. Dike and contain spill with inert material (sand, earth, etc.) nd transfer the liquid to containers for recovery or disposal. Keep spill ut of sewers and open bodies of water. Floors may be slippery, care should e exercised to avoid falls.

ASTE DISPOSAL METHOD: The normal methods of disposing unused paint applyn accordance with Federal, State, and local regulations. Approved landfill ecommended.

SECTION VIII-- SAFE HANDLING AND USE INFORMATION

EL\_IRATORY PROTECTION: None is required if good ventilation is maintained.

It—erwise wear MSHA/NIOSH approved respirator suitable for vapor or mist concentrations encountered.

JENTILATION: Use only with adequate ventilation. Mechanical local exhaust at point of contaminant (vapor or mist) release.

PROTECTIVE GLOVES: Impervious

3AM 11-16-85

EYE PROTECTION: Chemical safety goggles.

STHER PROTECTIVE EQUIPMENT: As necessary to avoid skin contact.

AYBIENIC PRACTICES: Wash thoroughly with soap and water after use.

#### SECTION IX-- SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in a cool dry area. Keep away from excessive heat as containers may rupture or burst. KEEP FROM FREEZING! Product may coagulate.

ITHER PRECAUTIONS:NONE

M mediate and his control (all 
#### FOR COATINGS , RESINS AND RELATED MATERIALS

1 1011 17411	, , , , , , , , , , , , , , , , , , , ,		1	***************************************						
<u>_</u>	DATE OF PREPA	ARA	TION	اب 1	/15/88				F'AGE	j.
MANUFACTURER'S NAME : R	ODDA FAINT CO	MPAI	ΥY							
AUDRESS : 6	932 S.W. MACA ORTLAND, OREGO	DAM DN	AVE 971	ENUE 219						
EMERGENCY TELEPHONE NO. INFORMATION TELEPHONE N	(50) DAY: (50)	3) 1	244-	-751	2 NIGH					
	SECTION I PI	RODI	Jer	IDE	ATTE ICA					
MANUFACTURER'S CODE IDE PRODUCT CLASS: ACRYLIC TRADE NAME: UNIQUE HMIS INFORMATION ** F	LATEX	AMM	ABIL			TEVE	EQUIPHE	NT C	M 46 2014 AMA AMA AMA	I RAME SUSSE SAME
	BECTION II									
CARCINOGENICITY: THE MIARC,	MATERIALS IN T	HIS ARC	PRO INOC	DDUC.	T HAVE.	TOM	BEEN LIS	TED BY	NTP+	
MATERIAL DESCRIPTION	CAS#		; !W	EIGH EIGH	i enere	TL-V	(TWA) MG/H3	LEL.	VAPO PRESS 1HG 06	R SURE SOF
1,2-ETHANEDIOL	107-21-1	1								
POLYACRYLATE POLYMER	1	ŀ		- 5		.501	NOT EST	**************************************	17	•00
NON IONIC SURFACTANT	<b>{</b>	1	.5 -	- 5	INOT	EST	5.001			1 1440 1444 1744
RUTILE TITANIUM DIOXIDE	113463-67-7	1:	20 -							1 MM 1944 1987
ALUMINUM SILICATE	1332-58-7	1	.5	- 5	LNOT	EST	10.001	!	İ	
MAGNESIUM SILICATE	114801-96-6	1	.5	- 5	INOT	EST !	2.001	ļ	]	

2-BUTOXYETHANOL | 111-76-2 | .5 - 5 | 50.00 | NOT EST | 1.1 | .60

1 .5 - 5 | 50.00 NOT EST!

| 35 - 50 | 25.00|NOT EST| | 17.00

ACRYLIC EMULSION RESIN |

AQUEOUS ACRYLIC POLYMER (

1 17.50

SECTION III PHYSICAL DATA 

BOILING RANGE

HIGH 387.0

LOW 212.0

VAPOR PRESSURE

17.50

VAPOR DENSITY

HEAVIER THAN AIR

EVAPORATION RATE

EQUAL TO BUTYL ACETATE 11.20

WEIGHT PER GALLON \* VOLATILE BY VOLUME

61.10

% VOLATILE BY WEIGHT

46.54

APPEARANCE-ODOR- WHITE LIQUID

SECTION IV --- FIRE AND EXPLUSION HAZARD DATA FLAMMABILITY CLASSIFICATION OSHA-CLASS III-A DOT- COMPUSTIBLE LIQUID

LOWEST FLASHPOINT T.C.C. 150.0 LOWER EXPLOSION LEVEL (LEL) 1.1

EXTINGUISHING MEDIA: (XX)-FOAM (XX)-ALCOHOL FUAM (XX)-CO2 (XX)-DRY CHEMICAL (XX)-WATER FOG Product will not support combustion. UNUSAL FIRE AND EXPLOSION HAZARDS: Product will not burn but may spatter if temperature exceeds boiling point. Dried paint films are capable of burning giving off oxides of carbon and/or nitrogen.

SPECIAL FIRE FIGHTING PROCEDURES: NONE

#### SECTION V --- HEALTH HAZARD DATA

EFFECTS OF OVER EXPOSURE: INHALATION: Adverse health effects from vapors or spray mists in poorly ventilated areas may include irritation of the mucous membranes of the nose, throat, respiratory tract and symptoms of headache and nausea.

SKIN CONTACT: Prolonged or repeated contact with product may cause skin irritation.

EYE CONTACT: Direct contact with product may result in eye irritation. INGESTION: May cause abdominal discomfort or pain, dizziness, malaise, and central nervous system depression. Severe kidney damage follows the swallow ing of large volumes of ethylene glycol.

EMERGENCY AND FIRST AID PROCEDURES: EYE & SKIN CONTACT: Wash eyes with plenty of water for 15 minutes and consult physician if irritation persists Wash skin thoroughly with soap and water.

INHALATION: Remove subject to fresh air and consult a physician.

INGESTION: If conscious, give two glasses of water and induce vomiting.

Call a physician immediately.

NOTES TO PHYSICIAN: The principal toxic effects of ethylene glycol, when swallowed, are kidney damage and metabolic acidosis. Ethanol is antidotal. and its early administration may block the formation of nephrotoxic metabolites of ethylene glycol in the liver.

SECTION VI -- REACTIVITY DATA

\_\_ABILITY: ( )-UNSTABLE (XX)-STABLE

HAZARDOUS FOLYMERIZATION ( )-MAY OCCUR (XX)-WILL NUT OCCUR

HAZARDOUS DECOMPOSITION PRODUCTS- Burning of dried paint films may produce oxides of carbon and/or nitrogen.

CONDITIONS TO AVOID: None

INCOMPATIBILITY (MATERIALS TO AVOID)— Normally unreactive; however, avoid strong bases at high temperature, strong acids, strong oxidizing agents and materials reactive with hydroxyl compounds.

#### SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Wear suitable protective equipment. Small spills should be flushed with large quantities of water. Larger spills should be collected for disposal. Keep spills out of sewers and open bodies of water. Floors may be stoppery, care should be exercised to avoid falls.

WASTE DISPOSAL METHOD: The normal methods of disposing of unused paint apply, in accordance with Federal, State, and Local regulations. At low concentrations in water, ethylene glycol is readily biodegradable in a biological wastewater treatment plant. Approved landfill recommended for large spills.

#### SECTION VIII- SAFE HANDLING AND USE INFORMATION

RESPIRATORY PROTECTION: None is required if good ventilation is maintained. herwise wear MSHA/NIOSH approved respirator suitable for organic vapors and/or mist concentrations encountered.

VENTILATION: Use only with adequate ventilation. Mechanical local exhaust at point of contaminant (vapor or mist) release. Maintain TLV below 50 ppm (125 mg/m3) ceiling, for vapor and mist combined (ACCEH 1984-85).

PROTECTIVE GLOVES: Impervious

EYE PROTECTION: Chemical safety goggles.

OTHER PROTECTIVE EQUIPMENT: As necessary to avoid skin contact.

HYGIENIC PRACTICES: Wash thoroughly with soap and water after use.

#### SECTION IX--- SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in a cool dry area. Keep away from excessive heat as containers may rupture or burst. KEEP FROM FREEZING! Product may coagulate.

OTHER PRECAUTIONS: NONE

GAM 11/22/85





18

### North American Refractories Co.

06551 00

900 Hanna Building 1422 Euclid Avenue Cleveland, Ohio 44115 216/621-5200

# NORTH AMERICAN REFRACTORIES PRODUCT SAFETY DATA SHEET

MANUFACTURER

MSDS # 3037-00

NORTH AMERICAN REFRACTORIES

Vendor:

Emergency Phone Number East (814) 236-3890 West (415) 432-4741

Date Issued: 02/11/88

Date Revised: 10/02/87

Product Type: Refractory Castable / Gun Material

Trade Name: ARMORKAST

\*\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION I - PRODUCT IDENTIFICATION \*\*\*\*\*\*\*\*

Chemical Name: High Alumina Castable Chemical Family: Al203 , CaO , SiO2

Chemical Family: Algus , Cau , Siug

\*\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION II - CHEMICAL COMPOSITION \*\*\*\*\*\*\*\*\*

Hazardous Ingredients: CAS Number: PCT:

Crystalline Silica including: N/A less than 1%

 Quartz
 14808-60-7

 Cristobalite
 14464-46-1

 Tridymite
 15468-32-3

Other Ingredients: CAS Number: PCT:

Alumina 1344-28-1 more than 50% Alumina Silicate 66402-68-4 less than 20% Hydraulic Setting Cement 12005-57-1 less than 35%

mind addit continue comment in the continue and

\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION III - PHYSICAL DATA \*\*\*\*\*\*\*\*\*\*\*

Appearance and Odor: Gray, granular, dry mixture, odorless.

\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION IV ~ FIRE AND EXPLOSION HAZARD \*\*\*\*\*\*\*\*\*

Flammability: This product is non-flammable and will not support combustion.



## North American Refractories Co.

900 Hanna Building 1422 Euclid Avenue Cleveland, Ohio 44115 216/621-5200

\*\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION V - HEALTH HAZARD

\*\*\*\*\*\*\*

Threshold Limit Value: For respirable dust containing Crystalline Silica:

OSHA PEL: 10 divided by (%Quartz + 2(%Tridymite)

+ 2(%Cristobalite)) expressed as mg/m3.

> Cristobalite...0.05mg/m3 Tridymite.....0.05mg/m3

For all ingredients not listed above:

OSHA:..., 10mg/m3 total dust

ACCIH: .........10mg/m3 total dust

Effects of Overexposure: Cement may cause irritation to skin and eyes.

Crystalline Silica:

Chronic exposure to dust could contribute to

delayed lung injury (silicosis). Symptoms include

coughing, wheezing, dyspnea, and impaired

pulmonary fuction. Points of attack: Respiratory

system and lungs.

No ingredient in this product is found on either the Federal OSHA, NTP, or IRAC list of carcinogens

Emergency and First Aid Data:

Skin: Wash thoroughly with soap and water.

Inhalation: Remove to fresh air.

Eyes: Flush with water for 15 minutes and get

medical help.

\*\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION VI - REACTIVITY DATA \*\*\*\*\*\*\*\*\*\*

Stability and Reactivity: This product is stable and non-reactive.

\*\*\*\*\*\*\*\* SECTION VII -- SPILL AND LEAK PROCEDURES \*\*\*\*\*\*\*\*\*\*\*

Steps to be Taken in Case of a Spill:

Avoid generating dust exposure during cleanup.

Waste Disposal Method: Dispose of material according to local, state or federal regulations and as final used condition of

the product dictates.

\*\*\*\*\*\*\*\*\*\*\* SECTION VIII - INDUSTRIAL HYGIENE INFORMATION \*\*\*\*\*

Ventilation: Local exhaust recommended to maintain exposures

below TLV.

Respiratory Protection: NIOSH approved dust type for exposures above TLV.

Protective Gloves: Impervious gloves recommended.

Eye Protection: Recommended.

ARCO

§\$D\$ # 3037~00 cont.

page :

## North American Refractories Co.

900 Hanna Building 1422 Euclid Avenue Cleveland, Ohio 44115 216/621-5200

\*\*\*\*\*\*\* SECTION IX - SPECIAL PRECAUTIONS

\*\*\*\*\*\*\*\*

Special Precautions: Avoid dust generation.

Precautionary Labeling: Product contains crystalline silica and

hydraulic setting cement.

WARNING: Prolonged inhalation of product

dust may cause delayed lung injury (silicosis). Contact may cause irritation to eyes and skin.

#### FOR COATINGS , RESINS AND RELATED MATERIALS

MAR C4 1988 PAGE 1 DATE OF PREPARATION- 2/25/88 MANUFACTURER'S NAME : RODDA PAINT COMPANY ADDRESS ADDRESS. 6932 S.W. MACADAM AVENUE CITY, STATE : PORTLAND: OREGON 97219 EMERGENCY TELEPHONE NO. DAY: (503) 244-7512 NIGHT: (503) 645-5642 INFORMATION TELEPHONE NO. DAY: (503) 244-7512 NIGHT: (503) 645-5642 SECTION I --- PRODUCT IDENTIFICATION MANUFACTURER'S CODE IDENTIFICATION: 83370 PRODUCT CLASS: ALKYD PRIMER TRADE NAME: BARRIER III METAL PRIMER - RED OXIDE HMIS INFORMATION \*\* HEALTH- 3\* FLAMMABILITY- 3 REACTIVITY- O PERSONAL PROTECTIVE EQUIPMENT- J SECTION II HAZARDOUS INGREDIENTS ---- INGREDIENT % BY TLV-(TWA) VAPOR WEIGHT PPM MG/M3 LEL PRESSURE CAS# MATERIAL DESCRIPTION MMHG @68DF ALKYD RESIN SOLUTION | | 35 - 50 | 100.00| 435.00| 1.0| 6.00 DI METHYL BENZENE 11330-20-7 | 15 - 20 | 100.001 435.001 OLEFIN FOLYMER 1.5 - 5 | 100.00|NOT EST| 1.0| 6.00 IRON OXIDE PIGMENT | 1309-37-1 | 20 - 25 | NOT EST| 1.40| ZINC POTASSIUM CHROMATE | 37300-23-5 | 4.42 | INOT EST| -05| |14801-96-6 | 10 - 15 |NOT EST| 2.00| MAGNESIUM SILICATE SECTION III PHYSICAL DATA VAPOR PRESSURE
VAPOR DENSITY
EVAPORATION RATE
WEIGHT PER GALLON
\*\*UNIVATIVE\*\*\*
\*\*UNIVATIVE\*\*\*

HIGH 285.0 LOW
\*\*LOW
HEAVIER THAN AIR
\*\*SLOWER THAN BUTYL ACKIATE
\*\*1.11 LOW 201.0

61.93

40.09

590550

41040 3370

% VOLATILE BY VOLUME

APPEARANCE-ODOR- RED LIQUID

% VOLATILE BY WEIGHT

SECTION IV -- FIRE AND EXPLOSION HAZARD DATA
FLAMMABILITY CLASSIFICATION OSHA-CLASS IC DOT- FLAMMABLE LIQUID
LOWEST FLASHFOINT T.C.C. 80.0 LOWER EXPLOSION LEVEL (LEL) 1.0

EXTINGUISHING MEDIA: (YES)-FOAM (YES)-ALCOHOL FUAM (YES)-DRY CHEMICAL (YES)-WATER FOG (N/A)-OTHER Blanket fire with one of the above extinguishing media. UNUSAL FIRE AND EXPLOSION HAZARDS: Vapors are heavier than air and may travel along the ground or be moved by ventilation and be ignited by heat, pilot lights, other flames and ignition sources at locations distant from material handling point. Never use welding or cutting torch on or near drum (even empty) because product (just residue) can ignite EXPLOSIVELY! SPECIAL FIRE FIGHTING PROCEDURES: For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment. Self-contained breathing apparatus with a full facepiece operated in pressure-demand or other positive pressure mode to protect against the hazardous effects of normal products of combustion or oxygen deficiency. In the event of fire, lead oxide (FbO) and chromium oxide (Cr2O3) could be produced.

#### SECTION V --- HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE: FOR FRODUCT-EYES: Can cause irritation, redness. traing, blurred vision. SKIN: Prolonged or repeated contact can cause Lerate irritation, defatting, dermatitis. Contains tead. Repeated and prolonged inhalation may cause delayed injury. See section II. See 29 CFR 1910.1025, Lead. Long term overexposure may cause cancer. PRIMARY ROUTES OF ENTRY: (YES)-DERMAL (YES)-INHALA(ION (YES)-INGESTION BREATHING: Excessive breathing of vapors can cause masat and respiratory irritation, dizziness, weakness, fatigue, nausea, haedache, possible unconsciousness, and even asphyxiation. SWALLOWING: Can cause gastrointestinal irritation, nausea, vomiting, and dirrhea. Aspiration of material into lungs can cause chemical pneumonitis which can be fatal. EMERGENCY & FIRST AID PROCEDURES: SKIN-Wash exposed area with soap & water. EYES-Flush with large amounts of water. INGESTION-Do not induce vomitingget medical attention! INHALATION-If affected, remove to fresh air. If breathing is difficult, administer oxygen. If breathing has stopped, give 

artificial respiration. Get medical attention:
MEDICAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE: As for lead above.
SECTION VI -- REACTIVITY DATA

STABILITY: ( )-UNSTABLE (YES)-STABLE

HAZARBOUS POLYMERIZATION ( )-MAY OCCUR (XXX) WILL NOT OCCUR

HAZARBOUS DECOMPOSITION PRODUCTS-Normal combustion forms carbon dioxide & water vapor; incomplete combustion can produce carbon monoxide. Lead and chromium oxides formed following ignition.

CONDITIONS TO AVOID: Excessive temperatures.

INCOMPATIBILITY (MATERIALS TO AVOID)—Strong exidizing agents (Nitric Acid. For imanganates, MEK Preexide, Etc.)

WVS OF BOSE

MALL OF THREE

#### SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Eliminate all ignition sources (flares, flames, including pilot lights & electrical sparks.) Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop spill at source, dike area of spill to prevent spreading, pump liquid to salvage tank. Remaining liquid may be taken up on sand, clay earth, floor absorbent or other absorbent material and shoveled into conatiners. Frevent run-off to sewers. streams, or other bodies of water.

WASTE DISPOSAL METHOD: Destroy by liquid incineration. Material collected on absorbent material may be deposited in an approved toxic substance tandfill in accordance with local, state, and federal regulations.

### SECTION VIII- SAFE HANDLING AND USE INFORMATION

RESPIRATORY PROTECTION: If TLV of the product or any component is exceeded a NIOSH/MESA jointly approved self-contained breathing apparatus with a full face piece operated in pressure demand or other positive pressure mode is advised; however, OSHA regulations also permit other NIOSH/MESA respirators under specified conditions. (See your safety equipment supplier.) VENTILATION: Provide sufficient mechanical and/or local exhaust to maintain exposure below TLV(S).

EYE PROTECTION: Chemical splash goggles in compliance with OSHA regulations are advised.

k DTECTIVE GLOVES: Wear resistant gloves such as;  ${ t BUNEWN}_{m{k}}$ 

OTHER PROTECTIVE EQUIPMENT: To prevent repeated or protonged skin contact. wear impervious clothing and boots.

HYGENIC PRACTICES: Wash hands before eating, smoking or using washroom.

#### SECTION IX- SPECIAL PRECAUTIONS

FRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in a cool, dry area. Keep away from heat, sparks, and open flame. Keep containers closed when not in use. Use only with adequate ventilation.

OTHER PRECAUTIONS: Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in this data sheet must be observed.

READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL!!! GAM 11/5/85

#### FOR COATINGS , RESINS AND RELATED MATERIALS

<u> </u>	DATE OF PREPAR	ATION- 2/1	.57 <del>8</del> 8		;	PAGE 1
MANUFACTURER'S NAME : ADDRESS :	RODDA PAINT COMP	ANY				
ADDRESS : CITY,STATE :	6932 S.W. MACADA PORTLAND, OREGON					
EMERGENCY TELEPHONE NO INFORMATION TELEPHONE	). (503) NO. (503)	244-7512 244-7512	NIGHT: C	503) 645- 503) 645-	-5642 -5642	
***************************************	SECTION I PRO	DUCT IDENT	IFICATION			
MANUFACTURER'S CODE II PRODUCT CLASS: ALKYD TRADE NAME: ALL PU HMIS INFORMATION **	DENTIFICATION: <b>121</b> ENAMEL IRPOSE EQUIPMENT	ENAMEL-WHI MABILITY-	2 PROTECTIVE	EQUIPMEN		
	SECTION II HA			.,.,	********	
CARCINOGENICITY: THE IARC	, OR OSHA AS CAR	CINOGENIC			•	
MATERIAL DESCRIPTION	CAS#	% BY WEIGHT	TLV- PPM	(TWA) MG/M3	LEL :	VAPOR PRESSURE
ALKYD RESIN SOLUTION	1 1	50 - 100	1 100.001	525.001	1.01	. 1.0
MONTMORILLONITE	71011-26-2	.5 - 5	INOT EST!	5.00}	i	
ORGANOPHILIC CLAY	71011-26-2	.5 - 5	NOT EST!	2.501	1	
ANIONIC DETERGENT	1 !	.5 - 5	INOT ESTIM	NOT EST	i	
RUTILE TITANIUM DIOXIJ	•	25 - 35	INOT EST!	10.001	1	
ALIPHATIC HYDROCARBON						.10
	SECTION III		" NATA			
BOILING RANGE VAPOR PRESSURE VAPOR DENSITY EVAPORATION RATE WEIGHT PER GALLO % VOLATILE BY VOLATILE BY WE APPEARANCE-ODOR-	HIGH .1 HEAVIER T SLOWER TH ON 9.6 OLUME 59.3	383.0 O HAN AIR IAN BUTYL 1 5 O	L.OW	310.0		

PREST FOR EVAN

590550 41040 2134

क्षेत्रहीं कुछ जिल्ला

SECTION IV -- FIRE AND EXPLOSION HAZARD DATA
FLAMMABILITY CLASSIFICATION OSHA-CLASS II DOT- COMBUSTIBLE LIQUID
LOWEST FLASHPOINT T.C.C. 100.0 LOWER EXPLOSION LEVEL (LEL) 1.0

EXTINGUISHING MEDIA: (Yes)-FOAM (Yes)-ALCOHOL FOAM (Yes)-002 (Yes)-WATER FOG (N/A)-OTHER (Yes)-DRY CHEMICAL Blanket fire with one of the above extinguishing media. UNUSAL FIRE AND EXPLOSION HAZARDS: Vapors are heavier than air and may travel along the ground or be moved by ventilation and ignited by heat, pilot lights, other flames and ignition sources at tocations distant from material handling point. Never use welding or cutting torch on or near drum (even empty) because product (just residue) can ignite EXPLOSIVELY! SPECIAL FIRE FIGHTING PROCEDURES: For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment. Self-contained breathing apparatus with a full facepiece operated in pressure-demand or other positive pressure mode to protect against the hazardous effects of normal products of combustion or exygen deficiency.

#### SECTION V -- HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE: FOR PRODUCT-EYES: Can cause irritation, redness, tearing, blurred vision. SKIN: Prolonged or repeated contact can cause moder ate irritation, defatting, dermatitis.

PPIMARY ROUTE(S) OF ENTRY: (Yes)-DERMAL (Yes)-INHALATION (Yes)-INGESTION LATHING: Excessive breathing of vapors can cause masat and respiratory irritation, dizziness, weakness, fatigue, nausea, headache, possible unconsciousness, and even asphyxiation. SWALLOWING: Can cause gastrointestinal irritation, nausea, vomiting, and diarrhea. Aspiration of material into tungs can cause chemical pneumonitis which can be fatal.

EMERGENCY & FIRST AID PROCEDURES: SKIN- Wash exposed area with soap & water EYES-Flush with large amounts of water. INGESTION- Do not induce vomiting-get medical attention! INHALATION-If affected, remove to fresh air. If breathing is difficult, administer oxygen. If breathing has stopped, give artificial respiration. Get medical attention.

MEDICAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE: None known.

#### SECTION VI -- REACTIVITY DATA

STABILITY: ( )-UNSTABLE (Yes)-STABLE
HAZARDOUS POLYMERIZATION ( )-MAY OCCUR (XXX)- WILL NOT OCCUR
HAZARDOUS DECOMPOSITION PRODUCTS- Normal combustion forms carbon dioxide &
water vapor; incomplete combustion can produce carbon monoxide.
CONDITIONS TO AVOID-Excessive temperatures.

INCOMPATIBILITY (MATERIALS TO AVOID) - Strong exidizing agents (Nitric Acid. Permanganates, MEK Perexide, Etc.)

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED ON SHILLED: Eliminate all nition sources (flares, flames including pilot lights & electrical

arks). Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop spill at source, dike area of spill to prevent spreading, pump liquid to salvage tank. Remaining liquid may be taken up on sand, clay, earth, floor absorbent, or other absorbent material and shoveled into containers. Frevent run-off to sewers. streams, or other bodies of water.

WASTE DISPOSAL METHOD- Destroy by liquid incineration. Material collected on absorbent material may be deposited in an approved toxic substance landfill in accordance with local, state, and federal regulations.

SECTION VIII— SAFE HANDLING AND USE INFORMATION RESPIRATORY PROTECTION: If TLV of the product or any component is exceeded. a NIOSH/MESA jointly approved self-contained breathing apparatus with a full face piece operated in pressure demand or other positive pressure mode is advised; however, OSHA regulations also permit other NIOSH/MESA respirators under specified conditions. (See your safety equipment supplier). VENTILATION: Provide sufficient mechanical and/or tocal exhaust to maintain exposure below TLV(s).

EYE PROTECTION: Chemical splash goggles in compliance with OSHA regulations are advised.

PROTECTIVE GLOVES: Wear resistant gloves such as:, BUNA-N.

OTHER PROTECTIVE EQUIPMENT: To prevent repeated or protonged skin contact, wear impervious clothing and boots.

HYGENIC PRACTICES: Wash hands before eating or using washroom.

#### SECTION IX-- SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in a coot, dry area. Keep away from heat, sparks, and open flame. Keep containers closed when not in use. Use only with adequate ventilation.

OTHER PRECAUTIONS: Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in this data sheet must be observed.

READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL!

MAR 0 4 1983

NATIONAL SANITARY SUPPLY CO. 13217 S. Figueroa Street Los Angeles, California 90061 Telephone 213/770-1970 Manufacturer:
PROCTER & GAMBLE
Foodservice & Lodging Products Div.
Winton Hill Technical Center
6071 Center Hill Rd
Cincinnati; Dhio 45201
Emergency Phone 513/562-1100

# MATERIAL SAFETY DATA SHEET

SECTION 1. IDENTIFICATION OF PRODUCT CLEANSER WITH CHLURINUL
Ingredients/Chemical Name: SODIUM DICHLORO-S-TRIAZINETRIONE DIHYDRATE,
TETRASODIUM PYROPHOSPHATE, SODIUM CARBONATE, SODIUM ALKYL BENZENE
SULFONATES, COLORANT AND PERFUME.
Other: THIS PRODUCT IS A EPA REGISTERED PESTICIDE. (EPA REG. No. 3573-51
BRAND CODE: 08195,08181 SECTION 2. INGREDIENTS CAS NUMBER ACGIH TLV OSHA PEL OTHER HAZARDOUS INGREDIENTS AS DEFINED BY OSHA, 29 CFR 1910\_1200
TETRASODIUM (COMPLEX SODIUM) 7722-88-5 5 mg/m3 N\_A\_ N.
PYROPHOSPHATE (PHOSPHATE)
THIS MIXTURE, WHEN TESTED AS A WHOLE, IS CONSIDERED AN EYE IRRITANT WITHIN THE MEANING OF THE OSHA HAZARD COMMUNICATION STANDARD. SECTION 3-PHYSICAL DATA Specific Gravity (Water=1): 1(BULK DENSITY) Boiling Point (F): NA Vapor Pressure (mm Hg\_): NA Vapor Density (Air=1): NA Evaporation Rate (nBuOAc=1): NA Percent Volatile (By Volume): 1 Solubility in Water: MODERATE Appearance and Odor: GREEN POWDER CEDAR PINE ODOR N.A.- NOT APPLICABLE Section 4. FIRE AND EXPLOSION HAZARD DATA Flash Point (Test Method): NA
Flammable Limits: LEL: NA UEL: NA
Fire Extinguishing Media: USE CO2, WATER OR DRY CHEMICAL.
Special Fire Fighting Procedures: NONE
Unusual Fire & Explosion Hazards: NONE KNONWN SECTION S. REACTIVITY DATA Stability: STABLE Conditions to Avoid: NONE KNOWN
Incompatibility - Materials to Avoid: AMMONIA OR ACID PRODUCTS
Hazardous Polymerization: WILL NOT OCCUR
Conditions to Avoid: NONE KNOWN
Hazardous Decomposition Products: CHLORINE GAS, CHLORAMINES IN SMALL
AMOUNTS SECTION 6. SPILL, LEAK AND DISPOSAL PROCEDURES Spill Response: SWEEP UP AND DISPOSE
Waste Disposal: PRODUCT CONTAINES BIODEGRADABLE SURFACTANTS. IF
PERMITTED, FLUSH DOWN SEWER DRAIN WITH LARGE EXCESS OF WATER OR DISPOSE
OF AT LANDFILL. DISPOSAL IS TO BE PERFORMED IN COMPLIANCE WITH ALL REGULATIONS.

. .

1.3.

\_\_\_

MATERIAL SAFETY DATA SHEET Product Name: INSTITUTIONAL PACK COMET CLEANSER WITH CHLORINOL Date Issued: 03/01/88

SECTION 7. HEALTH HAZARD DATA

Routes of Entry: INGESTION, EYE CONTACT, SKIN CONTACT, INHALATION. Health Hazards: (ACUTE AND CHRONIC) MILD SKIN, EYE AND MUCOUS MEMBRANE IRRITANT.

Symptoms of Overexposure: PROLONGED SKIN CONTACT OR INSTILLATION INTO THE EYE MAY RESULT IN SUPERFICIAL TRANSIENT EFFECTS SIMILAR TO THOSE PRODUCED BY OTHER HOUSEHOLD DETERGENTS. INGESTION MAY RESULT IN MILD GASTROINTESTINAL IRRITATION WITH NAUSEA, VOMITING AND DIARRHEA. Hedical Conditions Generally Aggravated by Exposure: USE ON IRRITATED OR EXTREMELY DRY SKIN MAY AGGRAVATE THE EXISTING CONDITION.

SECTION 8. EMERGENCY AND FIRST AID PROCEDURES

Eye Contact: FLUSH THOROUGHLY WITH WATER FOR 15 MINUTES. Skin Contact: DISCONTINUE USE, WASH WITH SOAP AND WATER. Inhalation: LEAVE DUSTY AREA. Ingestion: DILUTE WITH WATER OR MILK AND TREAT SYMPTOMATICALLY.

SECTION 9. SPECIAL PROTECTION INFORMATION

Respiratory Protection: NONE REQUIRED WITH NORMAL USAGE. FOR BULK HANDLING OR OTHER DUSTY CONDITIONS, USE NIOSH APPROVED RESPIRATORY PROTECTION FOR DUST. Ventilation: LOCAL EXHAUST: NONE REQUIRED WITH NORMAL USE. MECHANICAL (GENERAL) ACCEPTABLE. SPECIAL: NONE OTHER: NONE Protection Gloves: NONE REQUIRED WITH NORMAL USAGE. Eye Protection: NONE REQUIRED WITH NORMAL USAGE. Other Protective Clothing/Equipment: NONE REQUIRED WITH NORMAL USAGE.

SECTION 10. ADDITIONAL PRECAUTIONS

Other Storage and Handling Requirements: AVOID MOISTURE TO PREVENT LOSS OF BLEACHING/GERMICIDAL ACTION AND TO PREVENT CAKING.
OTHER: PRODUCT LABEL STATES: KEEP OUT OF REACH OF CHILDREN. MAY CAUSE IRRITATION. IN CASE OF CONTACT, FLUSH THOROUGHLY WITH WATER. IF IRRITATION PERSISTS, SEE A PHYSICIAN. IN CASE OF INGESTION DRINK A GLASS OF WATER.

THE SUBMISSION OR THIS MSDS MAY BE REQUIRED BY LAW, BUT THIS IS NOT AN ASSERTION THAT THE SUBSTANCE IS HAZARDOUS WHEN USE) IN ACCORANCE WITH PROPER SAFETY PRACTICES AND NORMAL HANDLING PROCEDURES. DATA SUPPLIED IS FOR USE ONLY IN CONNECTION WITH OCCUPATIONAL SAFETY AND HEALTH.





# ALUMINUM MATERIAL SAFETY DATA

ESCO CORPORATION
2141 N.W. 25TH AVE., P.O. BOX 10123
PORTLAND, OREGON 97210

# **Material Safety Data Sheet**

Aluminum Alloy
OUICK IDENTIFIER (In Plant Common Name)

Name	ESCO CORPORATION	Emergency Telephone No.	(503) 228	-2141
Address	2141 N.W. 25TH AVE., P. O. BOX 10123 PORTLAND, OREGON 97210	Other Information	TELEX 36-	0590
Signature of I		Calls Date	3-8-88	
	or Preparation	Prepared		
	and Symonyms ALUMINUM AND ALUMINUM ALLOYS		X SERIES	
Chemical Varne	AL AND AL ALLOYS	Chemical Family	METAL	
ormula	N/A			
ECTION	2 - HAZARDOUS INGREDIENTS			
rincipal Haz	ardous Component(s) (chemical & common name(s))	%	CAS No.	Permissible Exposure Limit (units)
	SEE SECTION 2 OF ATTACHMENT			The second secon
Soiline	3 - PHYSICAL AND CHEMICAL DATA Specific		Varor	
Boiling Point 24	67°C MELTING POINT 660°C Gravity (H		Vapor Pressure (mm	Hg) N/A
Boiling Point 24 Percent Volati by Volume (9	MELTING POINT 660°C Gravity (H  le 0.095-0.113 Evaporation b) < 0.00001 Density (Air = 1) lb/in3	n Rate = 1) DOES N	Pressure (mm	
Boiling Point 24 Percent Volati By Volume (9 Solubility N Water	67°C MELTING POINT 660°C Specific Gravity (H	n Rate = 1) DOES No	Pressure (mm ) OT VAPORIZE E	Hg) N/A EVEN AT HIGH TEMP! CONTACT WITH WAT!
Boiling Point 24 Percent Volati By Volume (9 Solubility Nater Appearance	MELTING POINT 660°C Specific Gravity (H	n Rate = 1) DOES No	Pressure (mm ) OT VAPORIZE E	EVEN AT HIGH TEMP
Boiling Point 24 Percent Volati by Volume (9 Solubility in Water Appearance and Odor	MELTING POINT 660°C Specific Gravity (He le Density (Air = 1) lb/in3 (Caractivity Water	n Rate = 1) DOES No	Pressure (mm ) OT VAPORIZE E	EVEN AT HIGH TEMP
Boiling 24 Percent Volation (9 Solubility in Water Appearance and Odor  Flash Point	MELTING POINT 660°C Gravity (He consists (Air = 1) 1b/in3 (Mater TIN-WHITE, MALLEABLE, DUCTILE METAL Flammable Limits Lel	n Rate = 1) DOES No	Pressure (mm ) OT VAPORIZE F Y EXPLODE ON	EVEN AT HIGH TEMP CONTACT WITH WAT
Boiling 24 Percent Volation Volume (9 Solubility in Water Appearance and Odor  SECTION Flash Point (Method User	MELTING POINT 660°C Gravity (He le Density (Air = 1) 1b/in3 ( Reactivity Water  TIN-WHITE, MALLEABLE, DUCTILE METAL  14 - FIRE AND EXPLOSION DATA  Flammable Limits Lel N/A N/A	n Rate = 1) DOES NO in MOLTEN MA	Pressure (mm ) OT VAPORIZE E Y EXPLODE ON	EVEN AT HIGH TEMPS CONTACT WITH WAT:  Auto-Ignition Temperature N/A
Boiling 24 Percent Volation Volume (9 Bolubility in Water Appearance and Odor  SECTION  Flash Point Method User	MELTING POINT 660°C Gravity (He le 0.095-0.113 Evaporation (S) (O.00001 Density (Air = 1) lb/in3 (Meachivity Water TIN-WHITE, MALLEABLE, DUCTILE METAL (A - FIRE AND EXPLOSION DATA)  Flammable Limits Lel N/A N/A  UNDER NORMAL, CONDITIONS USE METHODS & MARTHUSE COARSE WATER SPRAY ON CHIPS, TURNING OR DRY SAND ON FINES. DO NOT USE HALOX	n Rate = 1) DOES No in MOLTEN MA  Uel ATERIALS APP	Pressure (mm) OT VAPORIZE E Y EXPLODE ON PROPRIATE FOR SE CLASS D EX	EVEN AT HIGH TEMPS CONTACT WITH WAT:  Auto-Ignition Temperature N/A SURROUNDING FIRE TINGUISHING AGEN
Boiling Point 24 Percent Volati by Volume (9 Solubility m Water Appearance and Odor SECTION Flash Point (Method Used Extinguisher Media	MELTING POINT 660°C Gravity (Hele 0.095-0.113 Evaporation (Constitution) Density (Air = 1) 1b/in3 (Material Density (Air	n Rate = 1) DOES No in MOLTEN MA  Uel ATERIALS APP SS, ETC. US GENATED EXTI	Pressure (mm) OT VAPORIZE F Y EXPLODE ON PROPRIATE FOR SE CLASS D EX	EVEN AT HIGH TEMPS CONTACT WITH WATE
Boiling Point 24 Percent Volati by Volume (9 Solubility in Water Appearance and Odor SECTION Flash Point (Method Used Extinguisher Media	MELTING POINT 660°C Gravity (He conduction of the  n Rate = 1) DOES No in MOLTEN MA  Uel ATERIALS APP SS, ETC. US GENATED EXTI	Pressure (mm) OT VAPORIZE F Y EXPLODE ON PROPRIATE FOR SE CLASS D EX	EVEN AT HIGH TEMPS CONTACT WITH WATS  Auto-Ignition Temperature N/A SURROUNDING FIRE TINGUISHING AGEN ENTS ON SMALL CHI	
Boiling Point 24 Percent Volati by Volume (9 Solubility m Water Appearance and Odor SECTION Flash Point (Method Used Extinguisher Media	MELTING POINT 660°C  MELTING POINT 660°C  Gravity (He	n Rate = 1) DOES No in MOLTEN MA  Uel ATERIALS APP ES, ETC. US JENATED EXTI	Pressure (mm) OT VAPORIZE E Y EXPLODE ON PROPRIATE FOR SE CLASS D EX NGUISHING AG TE. PREVENT	Auto-Ignition Temperature N/A SURROUNDING FIRE FORMATION OF DUST



Aluminum Alloy

Stable M to Avoid GENERATION OF DUST & FINELY DIVIDED PARTICLES  AMERICANS SEE SECTION 5 OF ATTACHMENT  SEE SECTION 5 OF ATTACHMENT  SEE SECTION 6 OF ATTACHMENT  Conditions  May Occur [] Condition	SECTIO	N 5 - REACT	IVITY DATA						
AMERIAN DAVISION SEE SECTION 5 OF ATTACHMENT  ***PARTICULAR PRODUCT**	Subility				ENERATION O	F DUST & FINE	LY DIVIDED	PART:	ICLES
ALEXCORD  CONTROLLED PROJUCT  OZONE CAN BE GENERATED DURING PLASMA ARC CUTTING OR WELDING  ELECTION MY OKEW [1] Condume  Optimization May Okew [2] to Avoid NONE  ECTION 6 - HEALTH HAZARDS  Introduct Illumit Value  see section 2]  SEE SDCTION 2 OF ATTACHMENT  Chronic  Overexposure  SEE SDCTION 6 OF ATTACHMENT  Chronic  Overexposure  SEE SDCTION 6 OF ATTACHMENT  Chronic  Overexposure  SEE SDCTION 6 OF ATTACHMENT  Formal Develops See Section 8 OF ATTACHMENT  Formal Certinopern  National Toxicology Yes M LARC. Yes M NIOSH No [1]  Monographs No [1]  NIOSH No [1]  NIOSH No [1]  FORTIAL Certinopern  Program No [1] Monographs No [1]  NIOSH No [1]  FIRST TATION OF PULMONARY SYMPTOMS DEVELOP, CONSULT A PHYSICIAN  Eyes  IF IRRITATION DEVELOPS, CONSULT A PHYSICIAN  Lingerston  If IRRITATION DEVELOPS, CONSULT A PHYSICIAN  Lingerston  If CONSUMED WATER CONTRAINING ALUMINUM PARTICLES, CONSULT A PHYSICIAN  ECCTION 7 - SPILL, LEAK, AND DISPOSAL PROCEDURES  The by Taken in Case  fascinal is Released or Spille COLLECT SCRAP FOR RECYCLING. AVOID GENERATION & ACCUMULATION OF  SMALL CHIPS, Fine TURNINGS, & DUST.  AND PEDERALLY RESULATED  SECTION 8 - SPECIAL PRECAUTIONS  FORGELIAND SECTION 9 OF ATTACHMENT  AVOID GENERATION OF ALUMINUM POWDER, GRANULE PRODUCTS & DUST CLOUDS  The Precausions  IF REMELTED, MAKE CERTAIN NO WATER COMES IN CONTACT WITH MOLTEN ALUMINUM.  ECCTION 9 - SPECIAL PROTECTION INFORMATION  FOR ATTACHMENT  SEE SECTION 9 OF ATTACHMENT  SEE SECTION 9 OF ATTACHMENT  SEE SECTION 9 OF ATTACHMENT  FORGER 1			CEE CEMIUM	5 OF ATTACHME	יואא				
SECTION 6 - HEALTH HAZARDS    Conditions   May Occur	(Materials to	AV010)	SEE SECTION	) Of AllACIPIE	111				
May Occur M e Avoid NOME    Conditions   May Occur M   Conditions   Co	Hazardous	- Products OZ	ONE CAN BE GE	NERATED DURIN	G PLASMA AR	C CUTTING OR	WEILDING		
ECTION 6 - HEALTH HAZARDS  hreshold Limit Value	Hazardous	M. I. Condo			A STATE OF THE PERSON NAMED OF THE PERSON NAME				
Instabild Limit Value se section 2 OF ATTACHMENT greated at 1. Acute Overexposure SEE SECTION 2 OF ATTACHMENT (Throng Overexposure SEE SECTION 6 OF ATTACHMENT (Throng Overexposure SEE SECTION 6 OF ATTACHMENT (Throng Overexposure SEE SECTION 6 OF ATTACHMENT (SEE SECTION 7 OF ATTACHMENT (SEE SECTION 7 OF ATTACHMENT (SEE SECTION 7 OF ATTACHMENT (SEE SECTION 8 OF ATTACHMENT (SEE SECTION 8 OF ATTACHMENT (SECTION 7 OF ATTACHMENT (SECTION 8 OF ATTACHMENT (SECTION 8 OF ATTACHMENT (SECTION 8 OF ATTACHMENT (SECTION 8 OF ATTACHMENT (SECTION 9 OF	Polymerizatio	m Will Not O	ccur 🕅	to Avoid	NONE				
SEE SECTION 2 OF ATTACHMENT  Igns and  Overexposure  Overexposure  SEE SECTION 6 OF ATTACHMENT  SEE SECTION 6 OF ATTACHMENT  Overexposure  SEE SECTION 6 OF ATTACHMENT  Overexposure  SEE SECTION 6 OF ATTACHMENT  Overexposure  SEE SECTION 6 OF ATTACHMENT  SEE SECTION 6 OF ATTACHMENT  Overexposure  SEE SECTION 6 OF ATTACHMENT  SEC SECTION 9 OF ATTACHMENT  Overexposure  SEE SECTION 9 OF ATTACHMENT  Overexposure  SEE SECTION 9 OF ATTACHMENT  Overexposure  SEE SECTION 9 OF ATTACHMENT  Overexposure  SEE SECTION 9 OF ATTACHMENT  Overexposure  SEE SECTION 9 OF ATTACHMENT  Overexposure  SEE SECTION 9 OF ATTACHMENT  Overexposure  SEE SECTION 9 OF ATTACHMENT  Overexposure  SEE SECTION 9 OF ATTACHMENT  Overexposure  SEE SECTION 9 OF ATTACHMENT  Overexposure  SEE SECTION 9 OF ATTACHMENT  Overexposure  SEE SECTION 9 OF ATTACHMENT  Overexposure  SEE SECTION 9 OF ATTACHMENT  Overexposure  SEE SECTION 9 OF ATTACHMENT  Overexposure  Overexposure  SEE SECTION 9 OF ATTACHMENT  Overexposure  SEE SECTION 9 OF ATTACHMENT			H HAZARDS						
Chromic of Exposure  Overexposure  SEE SECTION 6 OF ATTACHMENT  Overexposure  SEE SECTION 6 OF ATTACHMENT  Overexposure  Indical Conditions Generally gegravated by Exposure  Protential Carcinogen  Program  No [] Monographs No [] NIOSH No []  No [] Monographs No [] NIOSH No []  No [] Monographs No [] NIOSH No []  Potential Carcinogen  Program  No [] Monographs No [] NIOSH No []  NIOSH No []  IF IRRITATION OR PULMONARY SYMPTOMS DEVELOP, CONSULT A PHYSICIAN  Eyes  IF IRRITATION DEVELOPS, CONSULT A PHYSICIAN  IF IRRITATION DEVELOPS, CONSULT A PHYSICIAN  Ingestion  IF CONSUMED WATER CONTAINING ALUMINUM PARTICLES, CONSULT A PHYSICIAN  SECTION 7 - SPILL, LEAK, AND DISPOSAL PROCEDURES  Eyes to be Taken in Case  lateral is Released or Spilled COLLECT SCRAP FOR RECYCLING. AVOID GENERATION & ACCUMULATION OF  SWALL CHIPS, FINE TURNINGS, & DUST.  ASEE Disposal Methods  NOT FEDERALLY REGULATED  SECTION 8 - SPECIAL PRECAUTIONS  PRECAUTIONS  PRECAUTION SORT STREET ON ALUMINUM POWDER, GRANULE PRODUCTS & DUST CLOUDS  When Processions in the Treatment of the Control of the	(see section 2			SEE SECT	ION 2 OF AT	TACHMENT			
Overexposure  SEE SECTION 6 OF ATTACHMENT  Folial Cardinogen Rational Toxicology Yes M LARC. Yes M NIOSH No []  Potential Cardinogen Program No [] Monographs No [] NIOSH No []  Potential Cardinogen Program No [] Monographs No [] NIOSH No []  Protential Cardinogen Program No [] Monographs No [] NIOSH No []  Protential Cardinogen Program No [] Monographs No [] NIOSH No []  Protential Cardinogen Program No [] Monographs No [] NIOSH No []  Protential Cardinogen Program No [] Monographs No [] NIOSH No []  Protential Cardinogen Program No [] Monographs No [] NIOSH No []  If Protectives  Inhalation If IRRITATION OR PULMONARY SYMPTOMS DEVELOP, CONSULT A PHYSICIAN  Fig. IF IRRITATION DEVELOPS, CONSULT A PHYSICIAN  Ingestion If Consumed Water Containing Aluminum Particles, Consult A PHYSICIAN  FIG. TION 7 - SPILL, LEAK, AND DISPOSAL PROCEDURES  East Disposal Methods  NOT FEDERALLY REGULATED  SECTION 8 - SPECIAL PRECAUTIONS  Recautions to be Taken In Case  Inhaliting in Storage STABLE UNDER NORMAL CONDITIONS OF USE, HANDLING, STORAGE & TRANSPORTATION  AVOID GENERATION OF ALUMINUM POWDER, GRANULE PRODUCTS & DUST CLOUDS  When Procedures  If REMELITED, MAKE CERTAIN NO WATER COMES IN CONTACT WITH MOLITEN ALUMINUM.  SECTION 9 - SPECIAL PROTECTION INFORMATION  Espitatory Protection  See SECTION 9 OF ATTACHMENT  Fertillion 1. Local 2. Mechanical 3-Special See SECTION 9 OF ATTACHMENT  Forticulate  Exhaust (General)  Experiment See SECTION 9 OF ATTACHMENT  Forticulates  Protective See SECTION 9 OF ATTACHMENT  Fig. See SECTION 9 OF ATTACHMENT  Fig. See SECTION 9 OF ATTACHMENT  Fig. See SECTION 9 OF ATTACHMENT  Fig. See SECTION 9 OF ATTACHMENT  Fig. See SECTION 9 OF ATTACHMENT  Fig. See SECTION 9 OF ATTACHMENT  Fig. See SecTION 9 OF ATTACHMENT  Fig. See SecTION 9 OF ATTACHMENT  Fig. See SecTION 9 OF ATTACHMENT  Fig. See SecTION 9 OF ATTACHMENT	Signs and Symptoms of	Exposure		sure SEE SECT	TION 6 OF AT	TACHMENT			
hemical Listed as Carcinogen National Toxicology Yes M LAR.C. Yes M NIOSH No []  Potential Cercinogen Program No [] Monographs No [] NIOSH No []  Potential Cercinogen Program No [] Monographs No [] NIOSH No []  Inceptive Israid Procedures  Inhalation IF IRRITATION OR PULMONARY SYMPTOMS DEVELOP, CONSULT A PHYSICIAN  Eyes IF IRRITATION DEVELOPS, CONSULT A PHYSICIAN  Ingestion IF CONSUMED WATER CONTAINING ALUMINUM PARTICLES, CONSULT A PHYSICIAN  INECTION 7 - SPILL, LEAK, AND DISPOSAL PROCEDURES  Eyes to be Taken in Case taterial is Released or Spilled COLLECT SCRAP FOR RECYCLING. AVOID GENERATION & ACCUMULATION OF SMALL CHIPS, FINE TURNINGS, & DUST.  Assic Disposal Methods  NOT FEDERALLY REGULATED  SECTION 8 - SPECIAL PRECAUTIONS  Recautions to be Taken  Handling and Storage STABLE UNDER NORMAL CONDITIONS OF USE, HANDLING, STORAGE & TRANSPORTATION  AVOID GENERATION OF ALUMINUM POWDER, GRANULE PRODUCTS & DUST CLOUDS  Ther Precautions  IF REMELIED, MAKE CERTAIN NO WATER COMES IN CONTACT WITH MOLITEN ALUMINUM.  SECTION 9 - SPECIAL PROTECTION INFORMATION  Espiratory Protection  SEE SECTION 9 OF ATTACHMENT  FOREIGNER OF AUTHORITHMENT SEE SECTION 9 OF ATTACHMENT  FOREIGNER OF AUTHORITHMENT SEE SECTION 9 OF ATTACHMENT  FOREIGNER OF AUTHORITHMENT SEE SECTION 9 OF ATTACHMENT  FOREIGNER OF AUTHORITHMENT SEE SECTION 9 OF ATTACHMENT  FOREIGNER OF AUTHORITHMENT SEE SECTION 9 OF ATTACHMENT  FOREIGNER OF AUTHORITHMENT SEE SECTION 9 OF ATTACHMENT  FOREIGNER OF AUTHORITHMENT SEE SECTION 9 OF ATTACHMENT  FOREIGNER OF AUTHORITHMENT SEE SECTION 9 OF ATTACHMENT  FOREIGNER OF AUTHORITHMENT SEE SECTION 9 OF ATTACHMENT  FOREIGNER OF AUTHORITHMENT SEE SECTION 9 OF ATTACHMENT  FOREIGNER OF AUTHORITHMENT SEE SECTION 9 OF ATTACHMENT  FOREIGNER OF AUTHORITHMENT SEE SECTION 9 OF ATTACHMENT	<ol><li>Chronic Overexpo:</li></ol>	sure		SEE SECT	TION 6 OF AT	TACHMENT			
hemical Listed as Carcinogen National Toxicology Yes M LA.R.C. Yes M NIOSH No ()  Protential Cercinogen Program No () Monographs No () NIOSH No ()  Investigation of the program No () Monographs No () NIOSH No ()  If IRRITATION OR PULMONARY SYMPTOMS DEVELOP, CONSULT A PHYSICIAN  Eyes IF IRRITATION DEVELOPS, CONSULT A PHYSICIAN  Sian IF IRRITATION DEVELOPS, CONSULT A PHYSICIAN  Ingestion IF CONSUMED WATER CONTAINING ALUMINUM PARTICLES, CONSULT A PHYSICIAN  SECTION 7 - SPILL, LEAK, AND DISPOSAL PROCEDURES  teps to be Taken in Case  laterial is Released or Spilled COLLECT SCRAP FOR RECYCLING. AVOID GENERATION & ACCUMULATION OF  SMALL CHIPS, FINE TURNINGS, & DUST.  Assic Disposal Methods  NOT FEDERALLY REGULATED  SECTION 8 - SPECIAL PRECAUTIONS  Recautions to be Taken  Handling and Storage STABLE UNDER NORMAL CONDITIONS OF USE, HANDLING, STORAGE & TRANSPORTATION  AVOID GENERATION OF ALUMINUM POWDER, GRANULE PRODUCTS & DUST CLOUDS  Wher Procedutions  IF REMELIED, MAKE CERTIAIN NO WATER COMES IN CONTACT WITH MOLTEN ALUMINUM.  SECTION 9 - SPECIAL PROTECTION INFORMATION  Respiratory Protection  Special Type)  SEE SECTION 9 OF ATTACHMENT  FOLICIANS  FOR COMPANY OF AUTHORISED OF AUTHO		•							
Potential Carcinogen Program No [] Monographs No [] NIOSH No []  mergency and risk aid Procedures Inhalation IF IRRITATION OR PULMONARY SYMPTOMS DEVELOP, CONSULT A PHYSICIAN  Eyes IF IRRITATION DEVELOPS, CONSULT A PHYSICIAN  Skin IF IRRITATION DEVELOPS, CONSULT A PHYSICIAN  Ingestion IF CONSUMED WATER CONTAINING ALUMINUM PARTICLES, CONSULT A PHYSICIAN  SECTION 7 - SPILL, LEAK, AND DISPOSAL PROCEDURES  ups to be Taken in Case faterial is Released or Spilled COLLECT SCRAP FOR RECYCLING. AVOID GENERATION & ACCUMULATION OF  SMALL CHIPS, FINE TURNINGS, & DUST.  ASSECTION 8 - SPECIAL PRECAUTIONS  RECAUSIONS to be Taken I Handling and Storage STABLE UNDER NORMAL CONDITIONS OF USE, HANDLING, STORAGE & TRANSPORTATION  AVOID GENERATION OF ALUMINUM POWDER, GRANULE PRODUCTS & DUST CLOUDS  Where Precautions IF REMELITED, MAKE CERTAIN NO WATER COMES IN CONTACT WITH MOLITEN ALUMINUM.  SECTION 9 - SPECIAL PROTECTION INFORMATION  Espiratory Protection Specify Type)  SEE SECTION 9 OF ATTACHMENT  FORECLIVE  ENGLISH OF ATTACHMENT  FORECLIVE Protective  Protective Protective  Protective  Protective  Protective  Protection SEE SECTION 9 OF ATTACHMENT								ya yang mengelebah	
mergency and rist Aid Procedures Inhalation If IRRITATION OR PULMONARY SYMPTOMS DEVELOP, CONSULT A PHYSICIAN  Eyes IF IRRITATION DEVELOPS, CONSULT A PHYSICIAN  Skin IF IRRITATION DEVELOPS, CONSULT A PHYSICIAN  Ingestion IF CONSUMED WATER CONTAINING ALUMINUM PARTICLES, CONSULT A PHYSICIAN  SECTION 7 - SPILL, LEAK, AND DISPOSAL PROCEDURES  Leps to be Taken in Case laterial is Released or Spilled COLLECT SCRAP FOR RECYCLING. AVOID GENERATION & ACCUMULATION OF  SMALL CHIPS, FINE TURNINGS, & DUST.  ASSED Disposal Methods NOT FEDERALLY REGULATED  SECTION 8 - SPECIAL PRECAUTIONS  TREAMLING and Storage STABLE UNDER NORMAL CONDITIONS OF USE, HANDLING, STORAGE & TRANSPORTATION  AVOID GENERATION OF ALUMINUM POWDER, GRANULE PRODUCTS & DUST CLOUDS  Wher Precautions  IF REMELTED, MAKE CERTAIN NO WATER COMES IN CONTACT WITH MOLITEN ALUMINUM.  SECTION 9 - SPECIAL PROTECTION INFORMATION  SPECIALLY PROFESSION  SEE SECTION 9 OF ATTACHMENT  FORECTION 1 - Local 2 Mechanical SEPECIAL SEE SECTION 9 OF ATTACHMENT  FORECTIONS  FOR THE STATE OF A TOTACHMENT  FORECTION 1 - CAN THE STATE OF A TOTACHMENT  FORECTION 2 - SPECIAL PROTECTION INFORMATION  SEE SECTION 9 OF ATTACHMENT  FORECTION 5 - SEE SECTION 9 OF ATTACHMENT  FORECTION 6 - CAN THACHMENT  FORECTION 6 - CAN THACHMENT  FORECTION 7 - CAN THACHMENT  FORECTION 9 - CAN THACHMENT  FORECTION 9 - ATTACHMENT  FORECTION 9 - CAN THACHMENT		-							
Inhalation  IF IRRITATION OR PULMONARY SYMPTOMS DEVELOP, CONSULT A PHYSICIAN  Eyes  IF IRRITATION DEVELOPS, CONSULT A PHYSICIAN  Skin IF IRRITATION DEVELOPS, CONSULT A PHYSICIAN  Ingestion  IF CONSUMED WATER CONTAINING ALUMINUM PARTICLES, CONSULT A PHYSICIAN  SECTION 7 - SPILL, LEAK, AND DISPOSAL PROCEDURES  teps to be Taken in Case laterial is Released or Spilled COLLECT SCRAP FOR RECYCLING. AVOID GENERATION & ACCUMULATION OF  SMALL CHIPS, FINE TURNINGS, & DUST.  ASSECTION 8 - SPECIAL PRECAUTIONS  RECALLORS BY SECURITY REGULATED  SECTION 8 - SPECIAL PRECAUTIONS  TO FEDERALLY REGULATED  SECTION 9 - SPECIAL PROTECTION INFORMATION  SPIRATORY FORECAST OF ALUMINUM POWDER, GRANULE PRODUCTS & DUST CLOUDS  SPIRATORY FORECAST OF ALUMINUM POWDER OF ATTACHMENT  SECTION 9 - SPECIAL PROTECTION INFORMATION  SEPTIANCY PROJECTION  ESPIRATORY PROJECTION  SEE SECTION 9 OF ATTACHMENT  FINE PROJECTIVE SEE SECTION 9 OF ATTACHMENT  FORECAST  F			Program	No []	Monographs	No []	NIOSH	No	[]
Eyes  IF IRRITATION OR PULMONARY SYMPTOMS DEVELOP, CONSULT A PHYSICIAN  Eyes  IF IRRITATION DEVELOPS, CONSULT A PHYSICIAN  IF IRRITATION DEVELOPS, CONSULT A PHYSICIAN  IF CONSUMED WATER CONTAINING ALUMINUM PARTICLES, CONSULT A PHYSICIAN  SECTION 7 - SPILL, LEAK, AND DISPOSAL PROCEDURES  Leps to be Taken in Case  laterial is Released or Spilled COLLECT SCRAP FOR RECYCLING. AVOID GENERATION & ACCUMULATION OF  SMALL CHIPS, FINE TURNINGS, & DUST.  ASTED Disposal Methods  NOT FEDERALLY REGULATED  SECTION 8 - SPECIAL PRECAUTIONS  TRECALIDIONS to be Taken  Handling and Storage STABLE UNDER NORMAL CONDITIONS OF USE, HANDLING, STORAGE & TRANSPORTATION  AVOID GENERATION OF ALUMINUM POWDER, GRANULE PRODUCTS & DUST CLOUDS  THE PREMELTED, MAKE CERTAIN NO WATER COMES IN CONTACT WITH MOLTEN ALUMINUM.  SECTION 9 - SPECIAL PROTECTION INFORMATION  SEPTIANTLY PROJECTION  ESPIRATORY PROJECTION  I. Local 2. Mechanical 3.Special SEE SECTION 9 OF ATTACHMENT  TRIBUTION OF TRIBUTION OF ATTACHMENT  TRIBUTION OF TRIBUTION OF ATTACHMENT  TRIBUTION OF TRIBUTION OF ATTACHMENT  TRIBUTION OF TRIBUTION OF ATTACHMENT  TRIBUTION OF TRIBUTION OF ATTACHMENT  TRIBUTION OF TRI	First Aid Pro								
Eyes  IF IRRITATION DEVELOPS, CONSULT A PHYSICIAN  Skin IF IRRITATION DEVELOPS, CONSULT A PHYSICIAN  Ingestion IF CONSUMED WATER CONTAINING ALUMINUM PARTICLES, CONSULT A PHYSICIAN  SECTION 7 - SPILL, LEAK, AND DISPOSAL PROCEDURES  Leps to be Taken in Case Laterial is Released or Spilled COLLECT SCRAP FOR RECYCLING. AVOID GENERATION & ACCUMULATION OF  SMALL CHIPS, FINE TURNINGS, & DUST.  ASSECTION 8 - SPECIAL PRECAUTIONS  TO PROMISE THE PROPERALLY REGULATED  SECTION 8 - SPECIAL PRECAUTIONS  THE ANALYSIS OF USE, HANDLING, STORAGE & TRANSPORTATION  AVOID GENERATION OF ALUMINUM POWDER, GRANULE PRODUCTS & DUST CLOUDS  When Procedure Procedure  SECTION 9 - SPECIAL PROTECTION INFORMATION  SECTION 9 - SPECIAL PROTECTION INFORMATION  SECTION 9 - SPECIAL PROTECTION INFORMATION  SEPTIAL STORY OF ATTACHMENT  FOR COMPANY OF ATTACHMENT  TO INCOME.  SECTION 9 OF ATTACHMENT	l. Inhalation	IF IRRITAT	ION OR PULMO	NARY SYMPTOMS	DEVELOP. CO	ONSULT A PHYS	ICIAN		
IF IRRITATION DEVELOPS, CONSULT A PHYSICIAN  Ingestion  IF CONSUMED WATER CONTAINING ALUMINUM PARTICLES, CONSULT A PHYSICIAN  SECTION 7 - SPILL, LEAK, AND DISPOSAL PROCEDURES  To be Taken in Case  Isterial is Released or Spilled COLLECT SCRAP FOR RECYCLING. AVOID GENERATION & ACCUMULATION OF  SMALL CHIPS, FINE TURNINGS, & DUST.  Aster Disposal Methods  NOT FEDERALLY REGULATED  SECTION 8 - SPECIAL PRECAUTIONS  Trecautions to be Taken I Handling and Storage STABLE UNDER NORMAL CONDITIONS OF USE, HANDLING, STORAGE & TRANSPORTATION  AVOID GENERATION OF ALUMINUM POWDER, GRANULE PRODUCTS & DUST CLOUDS  Wher Precautions  IF REMELTED, MAKE CERTAIN NO WATER COMES IN CONTACT WITH MOLTEN ALUMINUM.  SECTION 9 - SPECIAL PROTECTION INFORMATION  Espiratory Protection  Specify Type)  SEE SECTION 9 OF ATTACHMENT  CHILIATOR  Exhaust  (General)  SEE SECTION 9 OF ATTACHMENT  TOLECTOR  SEE SECTION 9 OF ATTACHMENT  CHILIATOR  SEE SECTION 9 OF ATTACHMENT  CHILIATOR  SEE SECTION 9 OF ATTACHMENT  CHILIATOR  CHILIATOR  CHILIATOR  SEE SECTION 9 OF ATTACHMENT  CHILIATOR  CHILIATOR  CHILIATOR  SEE SECTION 9 OF ATTACHMENT  CHILIATOR  CHILIATOR  SEE SECTION 9 OF ATTACHMENT  CHILIATOR  CHILIATOR  CHILIATOR  SEE SECTION 9 OF ATTACHMENT  CHILIATOR  CHILIAT	2. Eyes								THE CONTRACTOR OF THE PARTY OF
IF CONSUMED WATER CONTAINING ALUMINUM PARTICLES, CONSULT A PHYSICIAN  SECTION 7 - SPILL, LEAK, AND DISPOSAL PROCEDURES  Leps to be Taken in Case [aterial is Released or Spilled COLLECT SCRAP FOR RECYCLING. AVOID GENERATION & ACCUMULATION OF  SMALL CHIPS, FINE TURNINGS, & DUST.  ASSED DISPOSAL Methods  NOT FEDERALLY REGULATED  SECTION 8 - SPECIAL PRECAUTIONS  Trecautions to be Taken I Handling and Storage STABLE UNDER NORMAL CONDITIONS OF USE, HANDLING, STORAGE & TRANSPORTATION  AVOID GENERATION OF ALUMINUM POWDER, GRANULE PRODUCTS & DUST CLOUDS  Wher Precautions  IF REMELTED, MAKE CERTAIN NO WATER COMES IN CONTACT WITH MOLTEN ALUMINUM.  SECTION 9 - SPECIAL PROTECTION INFORMATION  SESPITADLY Protection  SEE SECTION 9 OF ATTACHMENT  CENTIAL TO BE SEED OF THE COMES	3. Skin								
ECTION 7 - SPILL, LEAK, AND DISPOSAL PROCEDURES  Leps to be Taken in Case Laterial is Released or Spilled COLLECT SCRAP FOR RECYCLING. AVOID GENERATION & ACCUMULATION OF  SMALL CHIPS, FINE TURNINGS, & DUST.  Laterial is Released or Spilled COLLECT SCRAP FOR RECYCLING. AVOID GENERATION & ACCUMULATION OF  SMALL CHIPS, FINE TURNINGS, & DUST.  Laterial is Released or Spilled COLLECT SCRAP FOR RECYCLING. AVOID GENERATION OF  NOT FEDERALLY REGULATED  SECTION 8 - SPECIAL PRECAUTIONS  Trecautions to be Taken  AVOID GENERATION OF ALUMINUM POWDER, GRANULE PRODUCTS & DUST CLOUDS  Wher Precautions  IF REMELITED, MAKE CERTAIN NO WATER COMES IN CONTACT WITH MOLITEN ALUMINUM.  SECTION 9 - SPECIAL PROTECTION INFORMATION  SEPTIALORY Protection  SEE SECTION 9 OF ATTACHMENT  CENTIAL SECTION 9 OF ATTACHMENT  FOREITY  FOREITY  FOREITY  SEE SECTION 9 OF ATTACHMENT  SEE SECTION 9 OF ATTACHMENT  SET SECTION 9 OF ATTACHMENT  FOREITY  FOREITY  SEE SECTION 9 OF ATTACHMENT  SEE SECTION 9 OF ATTACHMENT  CONTACT WITH MOLITEN SEE SECTION 9 OF ATTACHMENT  FOREITY  FOREITY  FOREITY  FOREITY  FOREITY  SEE SECTION 9 OF ATTACHMENT  SEE SECTION 9 OF ATTACHMENT  CONTACT WITH MOLITEN SEE SECTION 9 OF ATTACHMENT  FOREITY   4. Ingestion					S CONSTITUTE	DHYSICIAN			
The process of the Taken in Case lateral is Released or Spilled COLLECT SCRAP FOR RECYCLING. AVOID GENERATION & ACCUMULATION OF SMALL CHIPS, FINE TURNINGS, & DUST.  ASSET Disposal Methods  NOT FEDERALLY REGULATED  SECTION 8 - SPECIAL PRECAUTIONS  Trecautions to be Taken and Storage STABLE UNDER NORMAL CONDITIONS OF USE, HANDLING, STORAGE & TRANSPORTATION AVOID GENERATION OF ALUMINUM POWDER, GRANULE PRODUCTS & DUST CLOUDS  There Precautions  If REMELTED, MAKE CERTAIN NO WATER COMES IN CONTACT WITH MOLTEN ALUMINUM.  SECTION 9 - SPECIAL PROTECTION INFORMATION  SPECIAL PROTECTION INFORMATION  SECTION 9 OF ATTACHMENT  FINITED TO SECTION 9 OF ATTACHMENT  SINCE SECTION 9 OF ATTACHMENT  SINCE SECTION 9 OF ATTACHMENT  FOR PROTECTIVE SECTION 9 OF ATTACHMENT  SECTION 9 OF ATTACHMENT  SECTION 9 OF ATTACHMENT  SECTION 9 OF ATTACHMENT  SECTION 9 OF ATTACHMENT  SECTION 9 OF ATTACHMENT  SECTION 9 OF ATTACHMENT  SECTION 9 OF ATTACHMENT  SECTION 9 OF ATTACHMENT  SECTION 9 OF ATTACHMENT  SECTION 9 OF ATTACHMENT  SECTION 9 OF ATTACHMENT	SECTIO					o, consess a	IMIGICIAN		
SMALL CHIPS, FINE TURNINGS, & DUST.  /aste Disposal Methods  NOT FEDERALLY REGULATED  SECTION 8 - SPECIAL PRECAUTIONS  recautions to be Taken Handling and Storage Handling and Storage  STABLE UNDER NORMAL CONDITIONS OF USE, HANDLING, STORAGE & TRANSPORTATION  AVOID GENERATION OF ALUMINUM POWDER, GRANULE PRODUCTS & DUST CLOUDS  THE Precautions  IF REMELTED, MAKE CERTAIN NO WATER COMES IN CONTACT WITH MOLTEN ALUMINUM.  SECTION 9 - SPECIAL PROTECTION INFORMATION  espiratory Protection  specify Type)  SEE SECTION 9 OF ATTACHMENT  fentilation  Exhaust  (General)  Eye Protection  SEE SECTION 9 OF ATTACHMENT									
ASECTION 8 - SPECIAL PRECAUTIONS  Trecautions to be Taken I Handling and Storage  STABLE UNDER NORMAL CONDITIONS OF USE, HANDLING, STORAGE & TRANSPORTATION  AVOID GENERATION OF ALUMINUM POWDER, GRANULE PRODUCTS & DUST CLOUDS  Other Precautions  IF REMELTED, MAKE CERTAIN NO WATER COMES IN CONTACT WITH MOLTEN ALUMINUM.  SECTION 9 - SPECIAL PROTECTION INFORMATION  SEE SECTION 9 OF ATTACHMENT  STOLECTIVE  SEE SECTION 9 OF ATTACHMENT  FOLECTIVE  SEE SECTION 9 OF ATTACHMENT  FOLECTIVE  SEE SECTION 9 OF ATTACHMENT	Material is R				ING. AVOID	GENERATION &	ACCUMULAT	ION OF	7 .
NOT FEDERALLY REGULATED  SECTION 8 - SPECIAL PRECAUTIONS  recautions to be Taken Handling and Storage STABLE UNDER NORMAL CONDITIONS OF USE, HANDLING, STORAGE & TRANSPORTATION  AVOID GENERATION OF ALUMINUM POWDER, GRANULE PRODUCTS & DUST CLOUDS Other Precautions  IF REMELTED, MAKE CERTAIN NO WATER COMES IN CONTACT WITH MOLTEN ALUMINUM.  SECTION 9 - SPECIAL PROTECTION INFORMATION  SECTION 9 - SPECIAL PROTECTION INFORMATION  Sepiratory Protection Specify Type)  SEE SECTION 9 OF ATTACHMENT FOLICTIVE STORICTURE SPECIAL PROTECTION SEE SECTION 9 OF ATTACHMENT  FOLICTIVE STORICTIVE SPECIAL PROTECTION SEE SECTION 9 OF ATTACHMENT  SEE SECTION 9 OF ATTACHMENT  SEE SECTION 9 OF ATTACHMENT  SEE SECTION 9 OF ATTACHMENT  SEE SECTION 9 OF ATTACHMENT  SEE SECTION 9 OF ATTACHMENT	Waste Dispos		PS, FINE TURN	INGS, & DUST.	**************************************			· · · · · · · · · · · · · · · · · · ·	
AVOID GENERATION OF ALUMINUM POWDER, GRANULE PRODUCTS & DUST CLOUDS  THE Precautions  IF REMELTED, MAKE CERTAIN NO WATER COMES IN CONTACT WITH MOLTEN ALUMINUM.  SECTION 9 - SPECIAL PROTECTION INFORMATION  Espiratory Protection Specify Type)  SEE SECTION 9 OF ATTACHMENT  Folicitive Schaust  Folicitive Specify	· · · · · · · · · · · · · · · · · · ·		OT FEDERALLY	REGULATED					
AVOID GENERATION OF ALUMINUM POWDER, GRANULE PRODUCTS & DUST CLOUDS  THE Precautions  IF REMELTED, MAKE CERTAIN NO WATER COMES IN CONTACT WITH MOLTEN ALUMINUM.  SECTION 9 - SPECIAL PROTECTION INFORMATION  Espiratory Protection Specify Type)  SEE SECTION 9 OF ATTACHMENT  Folicitive Schaust  Folicitive Specify									
AVOID GENERATION OF ALUMINUM POWDER, GRANULE PRODUCTS & DUST CLOUDS  THE REMELTED, MAKE CERTAIN NO WATER COMES IN CONTACT WITH MOLTEN ALUMINUM.  SECTION 9 - SPECIAL PROTECTION INFORMATION  espiratory Protection Specify Type)  SEE SECTION 9 OF ATTACHMENT  foreigness  Final Storage & TRANSPORTATION  SECTION 9 - SPECIAL PROTECTION INFORMATION  SEE SECTION 9 OF ATTACHMENT  Foreigness  Foreig	SECTIO	N 8 - SPECIA	L PRECAUTI	ONS					
AVOID GENERATION OF ALUMINUM POWDER, GRANULE PRODUCTS & DUST CLOUDS  THE REMELTED, MAKE CERTAIN NO WATER COMES IN CONTACT WITH MOLTEN ALUMINUM.  SECTION 9 - SPECIAL PROTECTION INFORMATION  Sespiratory Protection Specify Type)  SEE SECTION 9 OF ATTACHMENT  Sentilation 1. Local Exhaust (General)  SEE SECTION 9 OF ATTACHMENT  Set Section 9 OF ATTACHMENT  SET SECTION 9 OF ATTACHMENT  SET SECTION 9 OF ATTACHMENT  SET SECTION 9 OF ATTACHMENT			BLE UNDER NO	RMAL CONDITION	NS OF USE, 1	HANDLING, STO	RAGE & TRA	NSPOR!	TATION.
The Procession of the Process of the Protective									
SECTION 9 - SPECIAL PROTECTION INFORMATION  espiratory Protection Specify Type)  SEE SECTION 9 OF ATTACHMENT  fentilation I. Local Exhaust (General)  Foliective Sloves Protection SEE SECTION 9 OF ATTACHMENT  Eye Protection SEE SECTION 9 OF ATTACHMENT  SEE SECTION 9 OF ATTACHMENT  SEE SECTION 9 OF ATTACHMENT  SEE SECTION 9 OF ATTACHMENT	Other Precau	tions						ווואדאנו	м.
Specify Type)  SEE SECTION 9 OF ATTACHMENT  Entilation 1. Local Exhaust (General)  Forective Eye Protection  SEE SECTION 9 OF ATTACHMENT  Eye Protection  SEE SECTION 9 OF ATTACHMENT  SEE SECTION 9 OF ATTACHMENT  SEE SECTION 9 OF ATTACHMENT	SECTIO								
entilation 1. Local 2. Mechanical 3.Special SEE SECTION 9 OF ATTACHMENT rotective Eye Protection SEE SECTION 9 OF ATTACHMENT Other Protective						CEE CECUITON	ס רובי אינוייניארי	יוייאידי	
Totective Eye Sloves Protection SEE SECTION 9 OF ATTACHMENT Other Protective SEE SECTION 9 OF ATTACHMENT	Ventilation	I. Local			3.Special			to minimum and the same	
Other Protective CETE CENTION O OF A THIN CHIMENITY	Protective Gloves	EARMIN	(C	oriolar)		SEE SECTION	9 OF ATTAC	HMENT	
See Section 9 of Attachment	Other Protec				170000011				



# MATERIAL SAFETY DATA SHEET - ALUMINUM AND ALLMINUM ALLOYS ATTACHMENT - PAGE 1

# SECTION 2 - HAZARDOUS INGREDIENTS\*

INGREDIENI	CAS I' NUMBER	PERCENT**	OSHA PEL (MG/M <sup>3</sup> ) 8-HOUR TWA	ACGIH (MG/M <sup>3</sup> ) TLV TWA
MUNIMULA	7429-90-5	87.8-99	5 (WELDING FUME) 10 (TOTAL OXIDE DUST)	5 (RESPIRABLE DUST) 5 (WELDING FUME)
COPPER	7440-50-8	0-6.3	0.1 (FUME) 1 (DUST AND MIST)	1.0 (DUST) 0.2 (FUME)
MANGANESE	7439-96-5	0-1.2	5 (DUST CEILING)	5 (DUST CEILING) 1 (FUME) 3 (STEL)
SILICON	7440-21-3	0-12.2	5 (RESPIRABLE DUST) 15 (TOTAL DUST)	•
MAGNESIUM	7439-95-4	0-5.1	15 (OXIDE FUME)	10 (FUME)
ZINC	7440-66-6	0-7.7	5 (OXIDE FUME) 5	(OXIDE FUME) 10 (STEL) NUISANCE (AS DUST)
TIN	7440-31-5	0-0.13	2 (INORGANIC EXCEPT OXIDES)	2.0
IRON	7439-89-6	0-0.7	10 (OXIDE FUME)	5 (WELDING FUME)
CHROMIUM	7440-47-3	.0435	0.025 (CHROME)	0.5 CR (III) 0.05 CR (V1)
NICKEL	7440-02-0	0-2.0	0.015	1.0
*NOTE:	LISTED BELOW	ARE PERTINENT A	BBREVIATIONS.	o ago, ago ago any asp into anin'nyo, into ago anto ago anto anin' anin' anin' anin' anin' anin' any ago ago a
	CAS = OSHA = PEL =		RACT SERVICE REGISTRY SAFETY AND HEALTH ADMINI XPOSURE LIMIT	STRATION

PEL = PERMISSIBLE EXPOSURE LIMIT

MG/M<sup>3</sup> = MILLIGRAMS PER CUBIC METER OF AIR

TWA = TIME WEIGHTED AVERAGE

ACGIH = AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS

TLV = THRESHOLD EXPOSURE LIMIT

STEL = SHORT TERM EXPOSURE LIMIT

T348/20 2719

<sup>\*\*</sup> THIS TABLE DOES NOT INCLUDE ALL COMMERCIAL AVAILABLE ALLOYS. DEPENDING ON THE GRADE OF ALUMINUM ALLOY, THE PERCENTAGE OF INGREDIENT MAY VARY. MINUTE QUANTITIES OF TRACE ELEMENTS MAY ALSO BE PRESENT.



# MATERIAL SAFETY DATA SHEET - ALUMINUM AND ALUMINUM ALLOYS ATTACHMENT - PAGE 2

## SECTION 5 - REACTIVITY DATA

Incompatibility - for finely divided aluminum and aluminum alloys

With Water: Generates hydrogen and heat

slowly. Water/aluminum mixtures may be hazardous when

confined.

With Heat: Oxidizes at a temperature-

dependent rate.

With Strong Oxidizers: Violent reaction with much

heat generation.

With Acids and Alkalies: Reacts to generate hydrogen.

With Halogenated

Compounds: Halogenated hydrocarbons can

react violently with finely

divided aluminum.

# SECTION 6 - HEALTH HAZARDS

## Signs and Symptoms of Exposure

In the natural state, aluminum and its alloys do not present inhalation, ingestion or contact health hazards. However, welding, burning, grinding, brazing, sawing or machining of the products may result in elevating the product temperature to reach or exceed its melting point or result in the generation of fumes and/or airborne dust (particulates). Metal fumes and dusts may pose health hazards depending on alloy type and dose and should be performed in well ventilated areas. For standard operations (e.g., melting, cutting, grinding), aluminum dust should be treated as a nuisance according to the American Conference of Governmental Industrial Hygienists (ACGIH).

### Acute Overexposure

Irritation of eyes, nose and throat may result from excessive exposure to fumes and dusts. Metal fume fever may result from high concentration of fumes and dusts of iron oxide, manganese, copper, magnesium oxide, etc. A metallic taste in mouth, irritation and dryness of mucous membranes, fever and chills usually lasting 24 to 48 hours are typical symptoms commonly associated with metal fume fever.



# MATERIAL SAFETY DATA SHEET - ALUMINUM AND ALUMINUM ALLOYS ATTACHMENT - PAGE 3

# SECTION 6 - HEALTH HAZARDS (continued)

Ozone generated during plasma arc cutting and/or welding can create eye, nose, and throat irritation including pulmonary congestion and edema.

# Chronic Overexposure

Prolonged chronic inhalation of metal fumes and dusts at work place may lead to the conditions listed with each element.

Aluminum - no known adverse health effects on humans. Considered as nuisance dust in occupational settings.

Copper - skin irritation, discoloration of the skin or hair.

Manganese - bronchitis, pneumonitis, loss of coordination.

Silicon - may produce x-ray changes in the lungs without disability.

Magnesium - bronchitis, pneumonitis, loss of coordination.

Zinc - bronchitis, pneumonitis, loss of coordination.

Tin - benign pneumoconiosis, stenosis.

Iron - as oxide, pulmonary effects, siderosis.

Chromium\* - dermatitis, upper respiratory tract inflammation and/or ulceration and possible cancer of nasal passages and lungs. Available information indicates that welding fume exposure does not induce human cancer.

Nickel\* - dermatitis, nasal cavities, pneumonitis and allergic asthmatic reaction, and lung cancer.

Nickel in a form of fume, dust, or mist is considered human carcinogen.

<sup>\*</sup> Considered as a carcinogen or potential human carcinogen.

# MATERIAL SAFETY DATA SHEET - ALUMINUM AND ALUMINUM ALLOYS ATTACHMENT - PAGE 4

### SECTION 9 - SPECIAL PROTECTION INFORMATION

Following personal protective equipment may be required while workers involve in welding, cutting, grinding, chipping, milling, or other works on aluminum products. Levels of protection required is a function of alloy type, workplace environment, and potential hazards anticipated.

# Respiratory Protection

Use NIOSH-approved particulate and/or acid fume respirator if the concentration of actual or potential airborne contaminant exceeds or is anticipated to exceed the exposure limits listed in Section 2 of attachment.

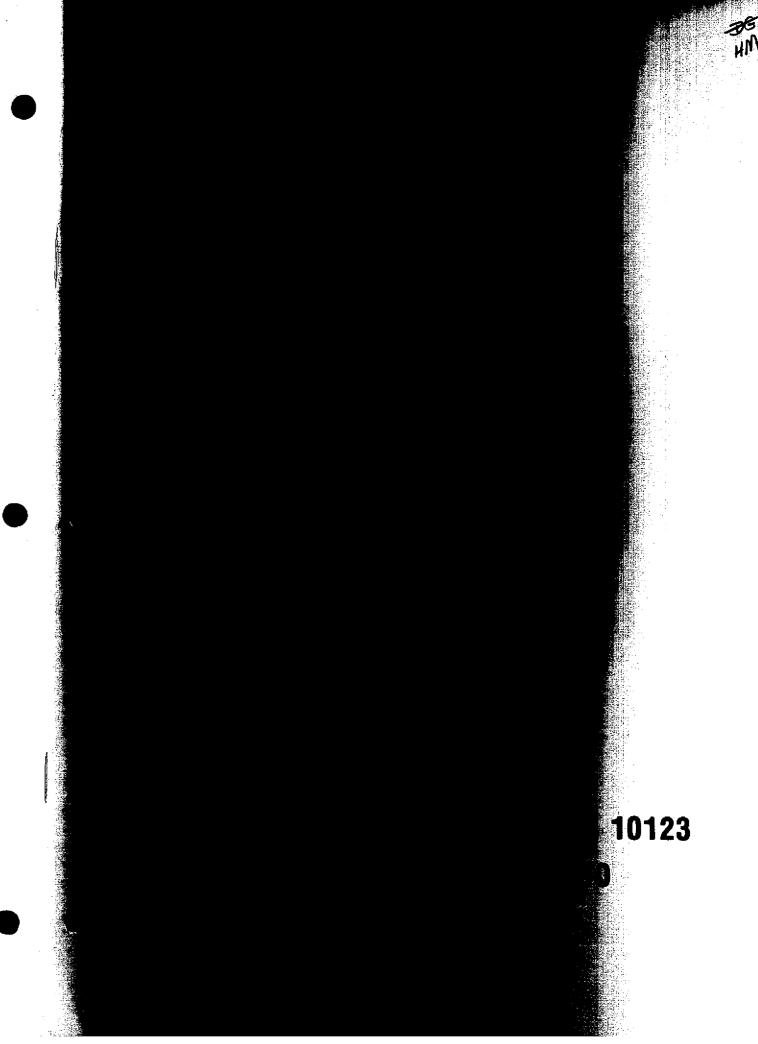
# Ventilation

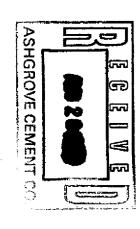
Fumes and waste gases should be removed at source by means of local exhaust ventilation. If local exhaust ventilation is not adequate or cannot be provided, then a high level of powered ventilation will be required.

<u>Protective Gloves, Eye Protection and Other Protective</u>
<u>Clothing or Equipment</u>

Use safety goggles, glasses, boots, aprons, helmet, handshield, earplugs, and muffs as needed to protect workers from physical, electrical, radiation and noise hazards.









# **Material Safety Data Sheet**

Stainless Steel

QUICK IDENTIFIER (In Plant Common Name)

Name	ESCO COR	₽₩Ţ₩Ţ	Emergency Telephone No.	o. (503) <b>2</b> 2	00_2141	
Address			Telephone No	5. (503) ZZ	20-2141	
-trenicas	2141 N.W PORTLAND	. 25TH AVE., P.O. BO , OREGON 97210	X 10123 Information	TELEX 3	36-0590	
Signature of	Person	, Oldson	Calls Date		70 0370	
	for Preparation		Prepared	3-15-88		
FEHOL	N 1 - IDENTI	TY				
Trade Name	and Synonyms	STAINLESS STEEL 2X	X TO 5XX SERIES			
Chemical			Chemical			
Name Formula		STAINLESS STEEL	Family	SPEEL		
	N/A					
ECTION	N 2 - HAZAR	DOUS INGREDIENTS				
rincipal Har	zardous Componer	nt(s) (chemical & common name(s	%	CAS No.	Permissib Limit (uni	
	CEE CEYT	ION 2 OF ATTACHMENT	· · · · · · · · · · · · · · · · · · ·			<del>-</del> /
	المدن تستن	TON 2 OF MIMELERAN				
					· · · · · · · · · · · · · · · · · · ·	
SECTION	12 DUVCI	VAL AND CHEMICAL I	MTA			
	N 3 - PHYSIO	CAL AND CHEMICAL I				
Boiling			Specific	Vapor 7 Pressure (n	am He) N/A	
Boiling Point	NOT APPL	ICABLE (N/A)	Specific Gravity (H <sub>2</sub> O=1) ABOUT	7 Pressure (n	un Hg) N/A	
Boiling Point Percent Volsi by Volume (*	NOT APPL		Specific Gravity (H <sub>2</sub> O=1) ABOUT Evaporation Rate (	Vapor 7 Pressure (n N/A	un Hg) N/A	
Boiling Point Percent Volsi by Volume (Solubility	NOT APPLI	ICABLE (N/A) Vapor	Specific Gravity (H <sub>2</sub> O=1) ABOUT Evaporation Rate ( = 1) Reactivity in	7 Pressure (n	um Hg) N/A	
Boiling Point Percent Volume (* Solubility In Water	NOT APPL tile %) N/A N/A	ICABLE (N/A) Vapor Density (Air = 1) N/A	Specific Gravity (H <sub>2</sub> O=1) ABOUT Evaporation Rate ( = 1) Reactivity in Water	7 Pressure (n	un Hg) N/A	
	NOT APPL tile %) N/A N/A	ICABLE (N/A) Vapor	Specific Gravity (H <sub>2</sub> O=1) ABOUT Evaporation Rate ( = 1) Reactivity in Water	7 Pressure (n	um Hg) N/A	
Boiling Percent Volai by Volume (4 Solubility n Water Appearance and Odor	NOT APPLITIE %) N/A N/A ODORLESS	ICABLE (N/A) Vapor Density (Air = 1) N/A	Specific Gravity (H <sub>2</sub> O=1) ABOUT Evaporation Rate ( = 1) Reactivity in Water  LUSTRE	7 Pressure (n	um Hg) N/A	
Boiling Percent Volai by Volume ( Solubility n Water Appearance and Odor	NOT APPLITIE %) N/A N/A ODORLESS	ICABLE (N/A) Vapor Density (Air = 1) N/A  SOLID WITH METALLIC	Specific Gravity (H <sub>2</sub> O=1) ABOUT Evaporation Rate ( = 1) Reactivity in Water  LUSTRE	7 Pressure (n N/A N/A	Auto-Ignition	
Boiling Percent Volai by Volume (* Solubility in Water Appearance and Odor Flash Point (Method Use	NOT APPLITIE  N/A  N/A  ODORLESS  14-FIRE A	ICABLE (N/A) Vapor Density (Air = 1) N/A  SOLID WITH METALLIC ND EXPLOSION DATA	Specific Gravity (H <sub>2</sub> O=1) ABOUT Evaporation Rate (=1) Reactivity in Water  LUSTRE	7 Pressure (n N/A N/A		N/A
Boiling Percent Volai by Volume (* Solubility in Water Appearance and Odor SECTION Flash Point (Method Use Extinguisher	NOT APPLITIE  N/A  N/A  ODORLESS  4 - FIRE AI  N/A	ICABLE (N/A) Vapor Density (Air = 1) N/A  SOLID WITH METALLIC ND EXPLOSION DATA Flammable Limits N/A	Specific Gravity (H <sub>2</sub> O=1) ABOUT Evaporation Rate (= 1) Reactivity in Water  LUSTRE	7 Pressure (n N/A N/A	Auto-Ignition	N/A
Boiling Percent Volai by Volume (* Solubility in Water Appearance and Odor SECTION Flash Point (Method Use Extinguisher	NOT APPLITIE  N/A  N/A  ODORLESS  4 - FIRE AI  N/A	ICABLE (N/A) Vapor Density (Air = 1) N/A  SOLID WITH METALLIC ND EXPLOSION DATA Flammable Limits	Specific Gravity (H <sub>2</sub> O=1) ABOUT Evaporation Rate (= 1) Reactivity in Water  LUSTRE	7 Pressure (n N/A N/A	Auto-Ignition	N/A
Boiling Percent Volai by Volume (* Solubility in Water Appearance and Odor SECTION Flash Point (Method Use Extinguisher Media	NOT APPLITIE  N/A  N/A  ODORLESS  4 - FIRE AI  N/A	ICABLE (N/A) Vapor Density (Air = 1) N/A  SOLID WITH METALLIC ND EXPLOSION DATA Flammable Limits N/A	Specific Gravity (H <sub>2</sub> O=1) ABOUT Evaporation Rate (= 1) Reactivity in Water  LUSTRE	7 Pressure (n N/A N/A	Auto-Ignition	N/A
Boiling Percent Volai by Volume (* Solubility in Water Appearance and Odor SECTION Flash Point (Method Use Extinguisher Media	NOT APPLICATION N/A N/A ODORLESS N/4 - FIRE AT M/A NO FIRE	ICABLE (N/A) Vapor Density (Air = 1) N/A  SOLID WITH METALLIC  ND EXPLOSION DATA  Flammable Limits  N/A  E OR EXPLOSION HAZARD	Specific Gravity (H <sub>2</sub> O=1) ABOUT Evaporation Rate (= 1) Reactivity in Water  LUSTRE	7 Pressure (n N/A N/A	Auto-Ignition	N/A
Boiling Percent Volai by Volume (* Solubility In Water Appearance and Odor SECTION Flash Point Method Use Extinguisher Media	NOT APPLICATION N/A N/A ODORLESS N/4 - FIRE AT M/A NO FIRE	ICABLE (N/A) Vapor Density (Air = 1) N/A  SOLID WITH METALLIC ND EXPLOSION DATA Flammable Limits N/A	Specific Gravity (H <sub>2</sub> O=1) ABOUT Evaporation Rate (= 1) Reactivity in Water  LUSTRE	7 Pressure (n N/A N/A	Auto-Ignition	N/A
Boiling Percent Volai by Volume (* Solubility in Water Appearance and Odor SECTION Flash Point (Method Use Extinguisher Media	NOT APPLICATION N/A N/A ODORLESS N/4 - FIRE AT d) N/A NO FIRE	ICABLE (N/A) Vapor Density (Air = 1) N/A  SOLID WITH METALLIC  ND EXPLOSION DATA  Flammable Limits  N/A  E OR EXPLOSION HAZARD	Specific Gravity (H <sub>2</sub> O=1) ABOUT Evaporation Rate (= 1) Reactivity in Water  LUSTRE	7 Pressure (n N/A N/A	Auto-Ignition	N/A



Stainless Steel

1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Unsiabie Siable	[X]	-	ondiuons Avoid	NONE				
pospetability									
(sections to Avoid)	<u>)                                     </u>	NONE	· · · · · ·						
ererdous	luete S	EE SECTION	N 6 OF A	TACHMENT					
ecomposition Prod	May Occur	1)		onditions					
	Will Not Oc		· · · · · · · · · · · · · · · · · · ·	Avoid	NONE				
ECTION 6 -	HEALTI	ł HAZARI	)S						
hreshold Limit Val se section 2)	lue	SEE SEC	TON 2 O	TATTACHM	ENT				
igns and		1. Acut							
ymptoms of Expos	ure	Ove	rexposure	SEE SECT	ION 6 OF AT	TACHMENT			
Overexposure				SEE SECT	ION 6 OF AT	TACHMENT			
<b>Medical Conditions</b>			·						
ggravated by Expo	osure			· · · · · · · · · · · · · · · · · · ·		<del> </del>			
hemical Listed as			l Toxicology	Yes [X]	LA.R.C.	Yes (X)	NIOSH	Yes	X
Potential Carcino	gen	Program	n .	No []	Monographs	No []		No	[]
mergency and irst Aid Procedures	B								
Inhalation			V 05 515	100 P 012 C	1000040 PF##	יייים מעוניי	LT A PHYSICI	זאג	
Comp	IF	IRRITATIO	N OR PUL	MUNAKY SY	MPIUMS DEVI	LUR, CUNSU	THE WALTISTEE	· PLES.	
. Eyes	IF	IRRITATIO	N DEVELO		LT A PHYSIC		·		
				PS, CONSU	LT A PHYSIC	CIAN			
. Sicin				PS, CONSU		CIAN			
. Skin	IF	IRRITATIO	N DEVELO	PS, CONSU	LT A PHYSIC	CIAN	isult a physi		
. Skin . Ingestion	IF IF	IRRITATIO	N DEVELO	PS, CONSU PS, CONSU NTAINING	LT A PHYSIC LT A PHYSIC METAL PART	CIAN			
Eyes  Skin  Ingestion  SECTION 7 -	IF SPILL, I	IRRITATIO	N DEVELO	PS, CONSU PS, CONSU NTAINING	LT A PHYSIC LT A PHYSIC METAL PART	CIAN			
. Skin . Ingestion ECTION 7 - : teps to be Taken in	IF SPILL, I n Case	IRRITATIO CONSUMED EAK, ANI	N DEVELO WATER CO DISPOS	PS, CONSU PS, CONSU NTAINING	LT A PHYSIC LT A PHYSIC METAL PART	CIAN			
. Skin . Ingestion SECTION 7 - : steps to be Taken in	IF SPILL, I n Case	IRRITATIO	N DEVELO WATER CO DISPOS	PS, CONSU PS, CONSU NTAINING	LT A PHYSIC LT A PHYSIC METAL PART	CIAN			
Skin Ingestion SECTION 7 - Steps to be Taken in Asterial is Released	IF SPILL, L n Case I or Spilled	IRRITATIO CONSUMED EAK, ANI	N DEVELO WATER CO DISPOS	PS, CONSU PS, CONSU NTAINING	LT A PHYSIC LT A PHYSIC METAL PART	CIAN			
. Skin . Ingestion .ECTION 7	IF SPILL, L n Case I or Spilled	IRRITATIO CONSUMED EAK, ANI N/A	N DEVELO WATER CO DISPOS	PS, CONSU PS, CONSU NTAINING	LT A PHYSIC LT A PHYSIC METAL PART	CIAN			
Skin Ingestion SECTION 7 - Steps to be Taken in Asterial is Released	IF SPILL, L n Case I or Spilled	IRRITATIO CONSUMED EAK, ANI	N DEVELO WATER CO DISPOS	PS, CONSU PS, CONSU NTAINING	LT A PHYSIC LT A PHYSIC METAL PART	CIAN			
. Skin . Ingestion .ECTION 7	IF SPILL, L n Case I or Spilled	IRRITATIO CONSUMED EAK, ANI N/A	N DEVELO WATER CO DISPOS	PS, CONSU PS, CONSU NTAINING	LT A PHYSIC LT A PHYSIC METAL PART	CIAN			
. Skin . Ingestion ECTION 7 teps to be Taken in faterial is Released	IF SPILL, I n Case I or Spilled	IRRITATIO CONSUMED EAK, ANI N/A	N DEVELO	PS, CONSU PS, CONSU NTAINING	LT A PHYSIC LT A PHYSIC METAL PART	CIAN			
Skin Ingestion SECTION 7 - Steps to be Taken in Asterial is Released Vaste Disposal Met	IF SPILL, I n Case I or Spilled thods	IRRITATIO CONSUMED EAK, ANI N/A	N DEVELO	PS, CONSU PS, CONSU NTAINING	LT A PHYSIC LT A PHYSIC METAL PART	CIAN			
Skin Ingestion ECTION 7 - teps to be Taken in sterial is Released Vaste Disposal Met ECTION 8 - recautions to be Taken	IF SPILL, I n Case I or Spilled thods SPECIA	IRRITATIO CONSUMED EAK, ANI N/A N/A	N DEVELO	PS, CONSU PS, CONSU NTAINING	LT A PHYSIC LT A PHYSIC METAL PART	CIAN			
. Skin . Ingestion . Ingestion . ECTION 7	IF SPILL, I n Case I or Spilled thods SPECIA	IRRITATIO CONSUMED EAK, ANI N/A	N DEVELO	PS, CONSU PS, CONSU NTAINING	LT A PHYSIC LT A PHYSIC METAL PART	CIAN			
Skin Ingestion ECTION 7 - teps to be Taken in faterial is Released Vaste Disposal Met ECTION 8 - recautions to be Ta Handling and Sto	IF SPILL, I n Case I or Spilled thods SPECIA	IRRITATIO CONSUMED EAK, ANI N/A N/A	N DEVELO	PS, CONSU PS, CONSU NTAINING	LT A PHYSIC LT A PHYSIC METAL PART	CIAN			
. Skin . Ingestion . Ingestion . ECTION 7 teps to be Taken in . sterial is Released . vaste Disposal Met . ECTION 8 recautions to be Taken in Handling and Sto	IF SPILL, I n Case I or Spilled thods SPECIA	IRRITATIO CONSUMED EAK, ANI N/A N/A	N DEVELO	PS, CONSU PS, CONSU NTAINING	LT A PHYSIC LT A PHYSIC METAL PART	CIAN			
. Skin . Ingestion . Ingestion . ECTION 7 teps to be Taken in laterial is Released . Stee Disposal Met . ECTION 8 recautions to be Taken in Handling and Sto	IF  SPILL, I n Case I or Spilled thods  SPECIA	IRRITATIO CONSUMED EAK, ANI N/A N/A L PRECAL N/A	N DEVELO	PS, CONSUPS,	LT A PHYSIC LT A PHYSIC METAL PART EDURES	CIAN			
ECTION 8 - recautions to be Tain Handling and Sto	IF  SPILL, I  n Case for Spilled  thods  SPECIA	IRRITATIO CONSUMED EAK, ANI N/A N/A L PRECAL N/A	N DEVELO	PS, CONSUPS,	LT A PHYSIC LT A PHYSIC METAL PART EDURES	CIAN			
ECTION 8 - Trecautions to be Tain Handling and Sto  SECTION 9 - Trecautions  SECTION 9 - Tecautions	IF  SPILL, I  n Case for Spilled  thods  SPECIA	IRRITATIO CONSUMED EAK, ANI N/A N/A L PRECAL N/A	N DEVELO	PS, CONSUPS,	LT A PHYSIC LT A PHYSIC METAL PART: EDURES	CIAN CIAN CLES CON	ISULT A PHYSI	CIAN	
ECTION 7 - Steps to be Taken in faterial is Released Vaste Disposal Metal  IF  SPILL, I  n Case for Spilled  thods  SPECIA	IRRITATIO CONSUMED EAK, ANI N/A N/A L PRECAL N/A	N DEVELO	PS, CONSU PS, CONSU NTAINING AL PROC	LT A PHYSIC  LT A PHYSIC  METAL PART:  EDURES  TON	CIAN CIAN CLES CON SEE SECTIO	N 9 OF ATTAC	CIAN		
ECTION 7 - teps to be Taken in faterial is Released Vaste Disposal Met ECTION 8 - recautions to be Ta Handling and Sto ther Precautions ECTION 9 - espiratory Protection specify Type) entitation	IF  SPILL, I  n Case for Spilled  thods  SPECIA  aken  rage	IRRITATIO CONSUMED EAK, ANI N/A N/A L PRECAL N/A	N DEVELOR WATER CO DISPOS TIONS	PS, CONSUPS,	LT A PHYSIC LT A PHYSIC METAL PART EDURES TON S.Special	CIAN CIAN CLES CON SEE SECTIO	ISULT A PHYSI	CIAN	
ECTION 7 - teps to be Taken in faterial is Released  Vaste Disposal Met  ECTION 8 - recautions to be Taken in Handling and Sto  ther Precautions  ECTION 9 - espiratory Protections  espiratory Protections  espiratory Protections  espiratory Protections  espiratory Protections  espiratory Protections	IF SPILL, I n Case for Spilled thods SPECIA aken rrage SPECIA	IRRITATIO CONSUMED EAK, ANI N/A N/A L PRECAL N/A	MECHANICA  MECHANICA  MECHANICA	PS, CONSUPS,	LT A PHYSIC LT A PHYSIC METAL PART EDURES TON	CIAN CIAN CLES CON SEE SECTION	N 9 OF ATTAC	HMENT	



# 2141 N.W. 25TH AVENUE RO. BOX 10123 PORTLAND, OREGON 97210 U.S.A.: TELEPHONE (503) 228-2141 TELEX 35-0560

# MATERIAL SAFETY DATA SHEET - STATULESS STEEL ATTACHENT - INCR 1

SECTION 2 - HAZARDOUS INCREDIENTS\*

INCREDIENT	CAS NUMBER	PERCENT	OSBA PEL (MG/H <sup>3</sup> ) ACCHI TIV (MG/M <sup>3</sup> ) 8-HOUR TWA 8-HOUR TWA
IRON	7439-89-6	0 <del>-9</del> 0	10.0 (OXIDE FUME) 5.0 (WEIDING FUMES)
CHROMIUM	7440-47-3	0–30	0.025 (CHROME) 0.5 CR (III) 0.05 CR (IV)
NICKEL	7440-02-2	0-99.5	0.015 (METAL) 1.0 (METAL)
MANGANESE	7439-96-5	0–15	5.0 (DUST CEILING) 5.0 (DUST CEILING) 1 (FUME) 3 (STEL)
SILICON	7440-21-3	0-3	5 (RESPIRABLE DUST) 5 (RESPIRABLE DUST) 15 (TOTAL DUST) 10 (TOTAL DUST)
MOLYBDENUM	7439-98-7	0-5	5 (SOLUBLE COMPOUNDS) 5 (SOLUBLE
			COMPOUNDS)  15 (INSOLUBLE 10 INSOLUBLE COMPOUNDS)  COMPOUNDS)
SELENIUM	7782-49-2	0-1	0.2
COBALIT	7440-48-4	0-1	0.1 (FUME AND DUST) 0.05 (FUME AND DUST)
COPPER	7440-50-8	0–5	0.1 (FUME) 0.2 (FUME) 1 (DUST AND MIST) 1 (DUST AND MIST)
TITANIUM	7440-32-6	0-6	N/A 10 (OXIDE)
ALUMINUM	7429-90-5	0-4.25	5 (WELDING FUME) 5 (RESPIRABLE DUST) 10 (TOTAL OXIDE DUST) 5 (WELDING DUST)
VANADIUM	7440-62-2	0-1.1	0.1 (OXIDE FUME CEILING) 0.05 (RESPIRABLE
			0.5 (RESPIRABLE DUST) 0.05 RESPIRABLE FUME)
TUNGSTEN	7440-33-7	0–2	N/A 5 (INSOLUBLE COMPOUNDS) 1 (SOLUBLE COMPOUNDS)

T348/20 2719

-1-



Stainless Steel

TEALES.

LISTED BELOW ARE PERTINENT ABBREVIATIONS.

CAS = CHEMICAL ABSTRACT SERVICE REGISTRY

OSHA = OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

PEL = PERMISSIBLE EXPOSURE LIMIT

 $MG/M^3$  = MILLIGRAMS PER CUBIC METER OF AIR

TWA = TIME WEIGHTED AVERAGE

ACGIH = AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS

TLV = THRESHOLD EXPOSURE LIMIT
STEL = SHORT TERM EXPOSURE LIMIT

THIS TABLE DOES NOT INCLUDE ALL COMMERCIAL AVAILABLE ALLOYS. DEPENDING ON THE GRADE OF STAINLESS STEEL, THE PERCENTAGE OF INCREDIENT MAY VARY. MINUTE QUANTITIES OF TRACE ELEMENTS MAY ALSO BE PRESENT.



2141 N.W. 25TH AVENUE P.O. BOX 10123 PORTLAND, OREGON \$7210 U.S.\*
TELEPHONE (503) 228-2141 TELEX 36-0590

Stainless Stee

# MATERIAL SAFETY DATA SHEET - STAINLESS STEEL ATTACHMENT - PAGE 2

# SECTION 6 - HEALTH HAZARDS

Signs and Symptoms of Exposure

In the natural state, steel products do not present inhalation, ingestion or contact health hazards. However, welding, burning, grinding, brazing, sawing, or machining can result in product temperature to reach or exceed its melting point or result in the generation of fumes and/or airborne dust (particulates). Metal fumes and dusts may pose health hazards and should be performed in well ventilated areas. Inhalation of fumes and dust are the major potential health hazards.

# Acute Overexposure

Irritation of eyes, nose and throat may result from excessive exposure to metal fumes and dusts. Mental fume fever may result from high concentrations of fumes and dusts of iron oxide and manganese. A metallic taste in mouth, irritation and dryness of mucous membranes, fever and chills usually lasting 12 to 48 hours are typical symptoms commonly associated with metal fume fever.

# Chronic Overexposure

Excessive prolonged inhalation of high concentrations of metal welding fumes and dust may lead to the conditions listed with each element.

Iron - as oxide, pulmonary effects, siderosis.

Chromium\* - dermatitis, upper respiratory tract inflammation and/or ulceration, and possibly cancer of nasal passages and
lungs. Available information concludes
that welding fumes exposure does not induce human cancer.

Nickel\* - dermatitis, upper respiratory tract inflammation and/or ulceration, and possibly cancer of nasal passages and lungs. Available information concludes that welding fumes exposure does not induce human cancer.

Manganese - bronchitis, pneumonitis, loss of coord-ination.

T348/20 2719

-2-

T348/20 2719



### Stainless Steel

		Stainless Steel
Silicon		may produce x-ray changes in the lungs without disability.
Molybdenum	-	irritation of the nose and throat, weight loss, and digestive disturbances in animals. No industrial poisoning has been reported.
Selenium	. <b>_</b> '	nasal and bronchial irritation, gastro- intestinal disturbances, garlic breath odor.
Cobalt	-	respiratory tract irritation, skin rash.
Copper	. <del>-</del>	"metal fume fever" - symptoms may include cough, headache, metallic taste in mouth, nausea, fever, chilling, pain in muscles and joints. This condition is transitory, usually lasting one (1) day or less.
Titanium	-	no chronic debilitating symptoms reported in humans.
Aluminum	-	no known adverse health impacts on humans. Considered as nuisance dust in occupational settings.
Vanadium*	-	common respiratory disease such as bron- chitis, pneumonitis and allergic asthma- tic reaction and lung cancer.
Tungsten	-	some evidence of pulmonary discomfort such as cough.

<sup>\*</sup>Considered as a carcinogen or potential human carcinogen.



# 2141 N.W. 25TH AVENUE P.O. BOX 10123 PORTLAND, OREGON 97210 U.S.A. TELEPHONE (503) 228-2141 TELEX 36-0590

Vainleas Steel

# MATERIAL SAFETY DATA SHEET - STAINLESS STEEL ATTACHMENT - PAGE 4

# SECTION 9 - SPECIAL PROTECTION INFORMATION

Following personal protective equipment may be required while workers involve in welding, cutting, grinding, chipping, milling, or other works on stainless steel products. Levels of protection required is a function of alloy type, workplace environment, and potential hazards anticipated.

# Respiratory Protection

Use NIOSH - approved particulate and/or acid fume respirator if the concentration of actual or potential airborne contaminant exceeds, or is anticipated to exceed, the exposure limits listed in Section 2 of attachment.

# Ventilation

Fumes and waste gases should be removed at source by means of local exhaust ventilation. If local exhaust ventilation is not adequate or cannot be provided, then a high level of powered ventilation will be required.

Protective Gloves, Eye Protection and Other Protective Clothing or Equipment.

Use safety goggles, glasses, boots, aprons, helmet, handshield, earplugs, and muffs as needed to protect workers from physical, electrical, radiation and noise hazards.



# STAINLESS STEEL MATERIAL SAFETY DATA

ESCO CORPORATION
2141 N.W. 25TH AVE., P.O. BOX 10123
PORTLAND, OREGON 97210

# **Material Safety Data Sheet**

# Stainless Steel QUICK IDENTIFIER (In Plant Common Name)

Y	#PC00 0000	~~~~~~~			ergency	/F03\	222 244	•	
lame Address	ESCO CORE	ORATION		Tel. Oth	ephone No.	(503)	228-214		
iden ess	2141 N.W. PORTLAND	. 25TH AVE., P OREGON 972		10100	ormation	TELEX	36-059	D D	
ignamire of Pe				Dat	£			(communicative) popularity governe	
esponsible for	Preparation			Pre	pared	3-15-8	8		
ECTION :	I - IDENTI	ΓΥ							
rade Name an	d Synonyms	STAINLESS STE	EL 2XX	TO 5XX SERIE	S		na vrádenický (MATT) by za vysová niho vazováty.	Der Wild GEFF better vertreten vertr	
hemical					emical				
lame ormula		STAINLESS STE	FT.	rar	nily	STEEL		Spiritual State of the Control of th	No. of the local division in the local divis
	N/A								
ECTION 2	2 - HAZAR	DOUS INGREDI	ENTS						
rincipal Hazaro	dous Componen	t(s) (chemical & commo	on name(s))	%	(	CAS No.		Permissih Limit (un	
	SEE SECTI	ON 2 OF ATTACH	יויאפא						
			1 14 1 1 V A					Name of Street, or other Party of Street, or	Partie value a graph property
							Name - 10/00 - 17/10/10/10/10		
								de character annual contrate supplication	
	Marie and College United States and September 1995 and the College States and September 1995 and the College S							rigrosporari manifest manifest i dell'especiali del	
	et kajali suudiki filija tiinestee milyes aanakon kila <u>assa a</u> yksi siid Ripatoinis Tiinessa suudiki kiloologa suuruska tii galeen kiloologa				an and a single and the proper and analysis of the second and the				
								for colors with a supplied with frauda et de colors and a supplied	
ECTION:	3 - PHYSIC	'AL AND CHEM	ICAL DA	TA					
oiling			ICAL DA	Specific	ABOUT 7	Vapor	e (mm Hg)	N/A	
oiling oint ercent Volatile	NOT APPLI	CABLE (N/A) Vapor		Specific Gravity (H <sub>2</sub> O=1) Evaporation Rate	ABOUT 7	Pressure	e (mm Hg)	N/A	
oiling oint ercent Volatile y Volume (%)	NOT APPLI	CABLE (N/A) Vapor	ICAL DA	Specific Gravity (H <sub>2</sub> O=1) Evaporation Rate ( = 1)	ABOUT 7		e (mm Hg)	N/A	
oiling oint ercent Volatile y Volume (%) olubility	NOT APPLI	CABLE (N/A) Vapor		Specific Gravity (H <sub>2</sub> O=1) Evaporation Rate (=1) Reactivity in	ABOUT 7	Pressure	e (mm Hg)	N/A	
oiling oint ercent Volatile y Vohrne (%) olubility n Water ppearance	NOT APPLI N/A N/A	CABLE (N/A) Vapor Density (Air = 1)	N/A	Specific Gravity (H2O=1) Evaporation Rate (= 1) Reactivity in Water	ABOUT 7	Pressure N/A	e (mm Hg)	N/A	
coiling coint ercent Volatile y Volume (%) olubility n Water appearance	NOT APPLI N/A N/A	CABLE (N/A) Vapor	N/A	Specific Gravity (H2O=1) Evaporation Rate (= 1) Reactivity in Water	ABOUT 7	Pressure N/A	(mm Hg)	N/A	
coiling coint ercent Volatile y Volume (%) olubility n Water appearance and Odor	NOT APPLI N/A N/A ODORLESS	CABLE (N/A) Vapor Density (Air = 1)	N/A	Specific Gravity (H2O=1) Evaporation Rate (= 1) Reactivity in Water	ABOUT 7	Pressure N/A	e (mm Hg)	N/A	
oiling oint ercent Volatile y Volume (%) olubility water ppearance and Odor ECTION 4	NOT APPLI N/A N/A ODORLESS	CABLE (N/A) Vapor Density (Air = 1)  SOLID WITH MET	N/A	Specific Gravity (H2O=1) Evaporation Rate (= 1) Reactivity in Water	ABOUT 7	Pressure N/A		N/A	
oiling oint ercent Volatile y Volume (%) olubility water ppearance and Odor ECTION 4 lash Point Method Used)	NOT APPLI N/A N/A ODORLESS	CABLE (N/A) Vapor Density (Air = 1)  SOLID WITH MET	N/A	Specific Gravity (H <sub>2</sub> O=1) Evaporation Rate ( = 1) Reactivity in Water  USTRE		Pressure N/A	Auto		N/A
oiling oint ercent Volatile y Volume (%) olubility Water ppearance and Odor ECTION 4 lash Point Method Used) extinguisher	NOT APPLI N/A N/A ODORLESS - FIRE AN	CABLE (N/A) Vapor Density (Air = 1)  SOLID WITH MET ND EXPLOSION Flammable Limits	N/A PALLIC LU DATA N/A	Specific Gravity (H <sub>2</sub> O=1) Evaporation Rate ( = 1) Reactivity in Water  USTRE		Pressure N/A	Auto	-Ignition	N/A
oiling oint ercent Volatile y Volume (%) olubility Water ppearance and Odor ECTION 4 lash Point Method Used) extinguisher	NOT APPLI N/A N/A ODORLESS - FIRE AN	CABLE (N/A) Vapor Density (Air = 1)  SOLID WITH MET	N/A PALLIC LU DATA N/A	Specific Gravity (H <sub>2</sub> O=1) Evaporation Rate ( = 1) Reactivity in Water  USTRE		Pressure N/A	Auto	-Ignition	N/A
coiling coint ercent Volatile y Volume (%) olubility n Water appearance nd Odor ECTION 4 Clash Point Method Used) Extinguisher Media	NOT APPLI N/A N/A ODORLESS - FIRE AN	CABLE (N/A) Vapor Density (Air = 1)  SOLID WITH MET ND EXPLOSION Flammable Limits	N/A PALLIC LU DATA N/A	Specific Gravity (H <sub>2</sub> O=1) Evaporation Rate ( = 1) Reactivity in Water  USTRE		Pressure N/A	Auto	-Ignition	N/A
coiling coint ercent Volatile y Volume (%) olubility n Water appearance nd Odor	NOT APPLI N/A N/A ODORLESS - FIRE AN N/A NO FIRE	CABLE (N/A) Vapor Density (Air = 1)  SOLID WITH MET ND EXPLOSION Flammable Limits	N/A PALLIC LU DATA N/A	Specific Gravity (H <sub>2</sub> O=1) Evaporation Rate ( = 1) Reactivity in Water  USTRE		Pressure N/A	Auto	-Ignition	N/A
coiling coint ercent Volatile y Volume (%) olubility n Water appearance and Odor ECTION 4 Clash Point Method Used) extinguisher Media	NOT APPLI N/A N/A ODORLESS - FIRE AN N/A NO FIRE	CABLE (N/A) Vapor Density (Air = 1)  SOLID WITH MET  ND EXPLOSION  Flammable Limits  E OR EXPLOSION	N/A PALLIC LU DATA N/A	Specific Gravity (H <sub>2</sub> O=1) Evaporation Rate ( = 1) Reactivity in Water  USTRE		Pressure N/A	Auto	-Ignition	N/A
coiling coint ercent Volatile y Volume (%) olubility n Water appearance nd Odor ECTION 4 clash Point Method Used) Extinguisher Media	NOT APPLI N/A N/A ODORLESS FIRE AN N/A NO FIRE	CABLE (N/A) Vapor Density (Air = 1)  SOLID WITH MET  ND EXPLOSION  Flammable Limits  E OR EXPLOSION	N/A PALLIC LU DATA N/A	Specific Gravity (H <sub>2</sub> O=1) Evaporation Rate ( = 1) Reactivity in Water  USTRE		Pressure N/A	Auto	-Ignition	N/A



Stainless Steel

SECTION	5 - REACTIV	TTY DATA					
Stability	Unstable Stable		Conditions to Avoid	NONE			
Incompatability (Materials to A		NONE		ika si Solomo ya Mangala (1976 ini kamangan mangan mangan kangan pangan pangan pangan pangan pangan pangan pan Bangan pangan			
Hazardous Decomposition	Products SE	E SECTION 6	OF ATTACHMENT	1			
Hazardous Polymerization	May Occur Will Not Occu		Conditions to Avoid	NONE			
SECTION	6 - HEALTH	HAZARDS					
Threshold Limi (see section 2)	it Value	SEE SECTION	2 OF ATTACHI	ŒNT			
Signs and Symptoms of E	Exposure	1. Acute Overexpos		TION 6 OF AT	TACHMENT		
2. Chronic Overexposus				TION 6 OF AT.			
Medical Condit Aggravated by	•						
Chamical Lister	d as Carcinogen	National Toxi	cology Yes [X]	LA.R.C.	Yes [X]		Yes 🔯
or Potential Car Emergency and First Aid Proces	rcinogen	Program	No []	Monographs		NIOSH	Yes [X] No []
1. Inhalation		RRITATION OF	PULMONARY SY	MPTOMS DEVE	LOP, CONSULT	A PHYSICIA	N.
2. Eyes			VELOPS, CONST				
3. Skin			VELOPS, CONST				
4. Ingestion			R CONTAINING			T A PHYSIC	IAN
SECTION			SPOSAL PROC				
Steps to be Tak Material is Rele	ten in Case eased or Spilled	N/A					
Waste Disposal	. Methods						
		N/A					7. T.
SECTION	8 - SPECIAL	PRECAUTIO	NS				
Precautions to b in Handling and		N/A					
Other Precaution	ns	N/A	Materials and second gardening of the second second second second second second second second second second se				
SECTION	9 - SPECIAL		N INFORMAT	TION			
Respiratory Pro (Specify Type)	tection			<u></u>	SEE SECTION 9	OF ATTACH	MENT
V <b>e</b> nillation	I. Local Exhaust		chanical neral)	3.Special S	SEE SECTION 9		
rotective Gloves Other Protective	ontaints-or-manifestation and the second sec			Eye Protection S	EE SECTION 9	OF ATTACH	ŒNT
Parer Lionscrive	· .			_	THE CHARGE OF C	OT BUILD BUTTOR	FT-10. WITH

Stainless Steel

# MATERIAL SAFETY DATA SHEET - STATNLESS STEEL ATTACHMENT - PAGE 1

# SECTION 2 - HAZARDOUS INGREDIENTS\*

INGREDIENT	CAS NUMBER	PERCENT	OSHA PEL (MG/M <sup>3</sup> ) ACCHI TLV (MG/M <sup>3</sup> 8-HOUR TWA 8-HOUR TWA
IRON	7439-89-6	0-90	10.0 (OXIDE FUME) 5.0 (WELDING FUMES)
CHROMIUM	7440-47-3	0-30	0.025 (CHROME) 0.5 CR (III) 0.05 CR (IV)
NICKEL	7440-02-2	0-99.5	0.015 (METAL) 1.0 (METAL)
MANGANESE	7439-96-5	0-15	5.0 (DUST CEILING) 5.0 (DUST CEILING) 1 (FUME) 3 (STEL)
SILICON	7440-21-3	0-3	5 (RESPIRABLE DUST) 5 (RESPIRABLE DUST) 15 (TOTAL DUST) 10 (TOTAL DUST)
MOLYBDENUM	7439-98-7	0-5	5 (SOLUBLE COMPOUNDS) 5 (SOLUBLE COMPOUNDS)
			15 (INSOLUBLE 10 INSOLUBLE COMPOUNDS) COMPOUNDS)
SELENIUM	7782-49-2	0-1	0.2
COBALIT	7440-48-4	0-1	0.1 (FUME AND DUST) 0.05 (FUME AND DUST)
COPPER	7440-50-8	0-5	0.1 (FUME) 0.2 (FUME) 1 (DUST AND MIST) 1 (DUST AND MIST)
TITANIUM	7440-32-6	0-6	N/A 10 (OXIDE)
ALUMINUM	7429-90-5	0-4.25	5 (WELDING FUME) 5 (RESPIRABLE DUST) 10 (TOTAL OXIDE DUST) 5 (WELDING DUST)
VANADIUM	7440-62-2	0-1.1	0.1 (OXIDE FUME CEILING) 0.05 (RESPIRABLE
			DUST) 0.5 (RESPIRABLE DUST) 0.05 RESPIRABLE FUME)
TUNGSTEN	7440-33-7	0-2	N/A 5 (INSOLUBLE COMPOUNDS) 1 (SOLUBLE COMPOUNDS)



**Stainless Steel** 

\*NOTE: LISTED BELOW ARE PERTINENT ABBREVIATIONS.

CAS = CHEMICAL ABSTRACT SERVICE REGISTRY

OSHA = OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

PEL = PERMISSIBLE EXPOSURE LIMIT

 $MG/M^3$  = MILLIGRAMS PER CUBIC METER OF AIR

TWA = TIME WEIGHTED AVERAGE

ACGIH = AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS

TLV = THRESHOLD EXPOSURE LIMIT
STEL = SHORT TERM EXPOSURE LIMIT

\*\* = THIS TABLE DOES NOT INCLUDE ALL COMMERCIAL AVAILABLE ALLOYS. DEPENDING ON THE GRADE OF STAINLESS STEEL, THE PERCENTAGE OF INCREDIENT MAY VARY. MINUTE QUANTITIES OF TRACE ELEMENTS MAY ALSO BE PRESENT.

EAGO

Stainless Steel

# MATERIAL SAFETY DATA SHEET - STAINLESS STEEL ATTACHMENT - PAGE 2

### SECTION 6 - HEALTH HAZARDS

Signs and Symptoms of Exposure

In the natural state, steel products do not present inhalation, ingestion or contact health hazards. However, welding, burning, grinding, brazing, sawing, or machining can result in product temperature to reach or exceed its melting point or result in the generation of fumes and/or airborne dust (particulates). Metal fumes and dusts may pose health hazards and should be performed in well ventilated areas. Inhalation of fumes and dust are the major potential health hazards.

# Acute Overexposure

Irritation of eyes, nose and throat may result from excessive exposure to metal fumes and dusts. Mental fume fever may result from high concentrations of fumes and dusts of iron oxide and manganese. A metallic taste in mouth, irritation and dryness of mucous membranes, fever and chills usually lasting 12 to 48 hours are typical symptoms commonly associated with metal fume fever.

### Chronic Overexposure

Excessive prolonged inhalation of high concentrations of metal welding fumes and dust may lead to the conditions listed with each element.

Iron - as oxide, pulmonary effects, siderosis.

Chromium\* - dermatitis, upper respiratory tract inflammation and/or ulceration, and possibly cancer of nasal passages and lungs. Available information concludes that welding fumes exposure does not in-

duce human cancer.

Nickel\* - dermatitis, upper respiratory tract inflammation and/or ulceration, and possibly cancer of nasal passages and lungs. Available information concludes that welding fumes exposure does not in-

duce human cancer.

Manganese - bronchitis, pneumonitis, loss of coord-

ination.



Stainless Steel

		Stainless Steel
Silicon	-	may produce x-ray changes in the lungs without disability.
Molybdenum	-	irritation of the nose and throat, weight loss, and digestive disturbances in animals. No industrial poisoning has been reported.
Selenium	· • • • • • • • • • • • • • • • • • • •	nasal and bronchial irritation, gastro- intestinal disturbances, garlic breath odor.
Cobalt	-	respiratory tract irritation, skin rash.
Copper	<b></b>	"metal fume fever" - symptoms may include cough, headache, metallic taste in mouth, nausea, fever, chilling, pain in muscles and joints. This condition is transitory, usually lasting one (1) day or less.
Titanium	<b>***</b>	no chronic debilitating symptoms reported in humans.
Aluminum	<b>-</b>	no known adverse health impacts on humans. Considered as nuisance dust in occupational settings.
Vanadium*	-	common respiratory disease such as bron- chitis, pneumonitis and allergic asthma- tic reaction and lung cancer.
Tungsten	-	some evidence of pulmonary discomfort such as cough.

<sup>\*</sup>Considered as a carcinogen or potential human carcinogen.

**Stainless Steel** 

# MATERIAL SAFETY DATA SHEET - STAINLESS STEEL ATTACHMENT - PAGE 4

### SECTION 9 - SPECIAL PROTECTION INFORMATION

Following personal protective equipment may be required while workers involve in welding, cutting, grinding, chipping, milling, or other works on stainless steel products. Levels of protection required is a function of alloy type, workplace environment, and potential hazards anticipated.

# Respiratory Protection

Use NIOSH - approved particulate and/or acid fume respirator if the concentration of actual or potential airborne contaminant exceeds, or is anticipated to exceed, the exposure limits listed in Section 2 of attachment.

## Ventilation

Fumes and waste gases should be removed at source by means of local exhaust ventilation. If local exhaust ventilation is not adequate or cannot be provided, then a high level of powered ventilation will be required.

Protective Gloves, Eye Protection and Other Protective Clothing or Equipment.

Use safety goggles, glasses, boots, aprons, helmet, hand-shield, earplugs, and muffs as needed to protect workers from physical, electrical, radiation and noise hazards.



```
------ MATERIAL SAFETY DATA SHEET
 ********** For chemicals, coatings and related materials ------
DATE PREPARED:
                                                                 SUPERCEDES:
 3-17-88
                                                                    8-8-86
             ------ Manufacturer ------
NAME : ChemRex Inc.
                                                      EMERGENCY PHONE NUMBER
ADDRESS: 6120 East 58th Avenue
ADDRESS: Commerce City , CO
                                                        DAY: (303)-289-5651
NIGHT: CHEMTREC
ADDRESS:
                                                                (800)-424-9300
ZIPCODE: 80022
                                                     INFORMATION PHONE NUMBER
                                                               (303) -289-5286
   H M I S Hazard Codes
NUMBER: 99888
NAME : FIXMASTER High-Temperature Red Silicone
                                                          Health: 2 Moderate
CLASS : Sealant
                                                     Flammability: 1 Slight
US KIT NUMBER: 09-9888
                                                       Reactivity: 0 Minimal
                            Personal Protective Equipment: B
CANADA KIT NO: 70-9888
---- Ingredient ---- | Percent | C. A. S. | LEL | Vapor Pressur
Material Description | by weight Registry No. | mm Hg @ 20 C
                               | Percent | C. A. S. | LEL | Vapor Pressure
Acetic Acid (released during cure) 3.5max. 64-19-7
   Boiling Range: N/A - N/A deg F Freezing Point: N/A deg F Vapor Pressure: 11.4 mm @ 20 deg C Vapor Density: Heavier than air
                                       H2O Soluble: Slight (0.1-1.0%) % Volatile by Volume: < 5 %
Specific Gravity: 1.04
Evaporation Rate: Slower
(relative to n-butyl acetate)
Appearance and Odor: Smooth paste with vinegar odor
------ Section IV - Fire and Explosion Hazard Data ------
Flash point: 300.0 deg F (Method Used) Tag
                                                      LEL
                                                              UEL (%V in air)
                               Explosive Limits:
                   Tag
                                                      5.4
FLAMMABILITY CLASSIFICATION
  OSHA: Combustible Liquid - Class IIIB
  DOT : Not regulated
EXTINGUISHING MEDIA:
   Foam, CO2, Dry Chemical
SPECIAL FIRE FIGHTING PROCEDURES:
   Wear self-contained breathing apparatus and protective clothing. Use
   water to cool exposed containers. Water stream directed into fire may
   cause frothing with subsequent spread of fire.
UNUSUAL FIRE AND EXPLOSION HAZARDS:
   Irritating and/or toxic gases or fumes may be generated by thermal decomposition or combustion. Closed containers may rupture or explode
    (due to pressure build-up) when exposed to extreme heat.
             ----- Section V - Toxicological Information -
                                                   | LD50 (mg/kg) | LC50 (ppm)
                                | PEL | TLV (twa) | (rat) | (rbt) | (rat) | ppm |mg/m3| ppm | ORAL |DERMAL| INHAL
 ---- Ingredient -----
 Material Description
                                  10. N/A 10.0 3310.0 1060.0
Acetic Acid
      EFFECTS OF OVEREXPOSURE:
                               THRESHOLD LIMIT VALUES: See Section V
ACUTE OVEREXPOSURE INFORMATION
   EYES: Severe irritant. May cause permanent corneal injury.
   SKIN: Moderate irritant. May cause redness and dermatitus.
   INHALATION: May cause irritation of respiratory tract.
   Overexposure may cause headache, nausea, and vomitting.

Material aspirated into lungs may cause chemical pneumonitis.

INGESTION: May cause irritation of mouth, throat, and stomach.

Symptoms include nausea, abdominal pain and possible collapse.
    *Preexisting pulmonary and dermatological dysfunctions may be aggravated
    by exposure to hazardous components.
```

EMERGENCY AND FIRST AID PROCEDURES:  EYES: Flush with plenty of water at least 15 minutes. Obtain
immediate medical attention.  SKIN: Remove contaminated clothing. Wash affected area(s) thoroughly
with soap and water. Consult a physician. INHALATION: Remove to fresh air. If breathing is difficult, give
oxygen. Administer artificial respiration if not breathing. Obtain medical attention. INGESTION: DO NOT INDUCE VOMITTING.
Give water or milk if victim is conscious and not drowsy.  Should vomitting occur, be sure to keep victim's head below
hips to avoid aspiration of vomitus into the lungs. Obtain immediate medical attention.
Section VII - Reactivity Data
STABILITY: Stable STABILITY CONDITIONS TO AVOID: Contamination with moisture
INCOMPATABILITY (MATERIALS TO AVOID CONTACT WITH): Not Applicable
HAZARDOUS DECOMPOSITION PRODUCTS: Acrid fumes. Oxides of carbon.
HAZARDOUS POLYMERIZATION: Will not occur POLYMERIZATION CONDITIONS TO AVOID: Not Applicable
Section VIII - Spill or Leak Procedures
STEPS FOR MATERIAL SPILLAGE:
Ventilate area. Wear appropriate protective equipment. Absorb with inert material. Sweep into containers with lids. Cover loosely and remove to appropriate waste area. Wash spill area with soap and water.
WASTE DISPOSAL METHODS: Review all local, state, and federal regulations concerning health and pollution for appropriate disposal procedures.
RESPIRATORY PROTECTION:  If the TLV is exceeded, if use is performed in a poorly ventilated confined space or area with limited ventilation, use NIOSH-approved respirator in accordance with 29 CFR 1910.134.
VENTILATION: Local exhaust as needed to control vapor/dust levels to below recommended limits.
PROTECTIVE GLOVES: Impervious rubber.
EYE PROTECTION: Chemical safety goggles
OTHER PROTECTIVE EQUIPMENT: Clean protective clothing
Section X - Special Precautions
HANDLING AND STORAGE PRECAUTIONS: FOR PROFESSIONAL USE ONLY
DO NOT TAKE INTERNALLY AVOID CONTACT WITH EYES, SKIN, AND CLOTHING AVOID BREATHING VAPOR
USE ONLY WITH ADEQUATE VENTILATION  KEEP OUT OF REACH OF CHILDREN
OTHER INFORMATION:
*N/A = Information or data Not Available***  **NTP = National Toxicology Program
**IARC = International Agency for Research on Cancer  **ACGIH = American Conference of Governmental Industrial Hygienists
**OSHA = Occupational Safety and Health Administration ***PEL = Permissable Exposure Limit (8-hr. TWA) (OSHA) ***TLV = Threshold Limit Value (8-hr. TWA) (ACGIH)

### ------ Section XI - Regulatory Data -TRANSPORTATION DOT UN HAZARD CLASS: Not Regulated UN/NA NUMBER: Not Regulated Not Regulated Not Regulated SHIPPING NAME: Not Regulated CLASS NUMBER: Not Regulated Not Regulated Not Regulated SUBSID. RISK: Not Applicable Not Applicable PACKING GROUP: Not Applicable Not Applicable REPORTING CERCLA REPORTABLE QUANTITY: As product: none As Wast SARA TITLE III EMERGENCY RESPONSE REPORTABLE QUANTITY: none As Waste: none SARA TITLE III INVENTORY REPORTING (Y/N): y SARA TITLE III HAZARD CLASS(ES): acute health hazard COMPONENTS ON TSCA INVENTORY (Y/N): y DISPOSAL EPA RCRA WASTE CLASS: Not Regulated EPA RCRA WASTE NUMBER: Not Regulated

CALIFORNIA LIST LAND BAN (Y/N): Not Applicable

This information is furnished without warranty, representation, or license of any kind, except that this information is accurate to the best of Rexnord's knowledge, or is obtained from sources belived by Rexnord to be accurate. No warranty is expressed or implied regarding the accuracy of this information or the results to be obtained from its use thereof. Rexnord assumes no responsibility for injuries proximately caused by use of the Material if reasonable safety procedures are not followed as stipulated in this Data Sheet. Additionally, Rexnord assumes no responsibility for injuries proximately caused by abnormal use of the Material even if reasonable safety procedures are followed. Buyer assumes the risk in its use of the Material.

```
DATE PREPARED:
                                                       SUPERCEDES:
3-17-88
                 ----- Manufacturer ----
                                              EMERGENCY PHONE NUMBER
NAME : ChemRex Inc.
                                                DAY: (303)-289-5651
NIGHT: CHEMTREC
ADDRESS: 6120 East 58th Avenue
ADDRESS: Commerce City , CO
ADDRESS:
                                                      (800) -424-9300
                                             INFORMATION PHONE NUMBER
ZIPCODE: 80022
                                                 (303) -289-5651
H M I S Hazard Codes
NUMBER: 99949
NAME : FIXMASTER Clear Silicone
                                                 Health: 2 Moderate
CLASS : Sealant
                                             Flammability: 1 Slight
                                              Reactivity: 0 Minimal
US KIT NUMBER: 09-9949
                        Personal Protective Equipment: B
CANADA KIT NO: 70-9949
  -------
---- Ingredient ---- | Percent | C. A. S. | LEL | Vapor Pressure | Material Description | by weight|Registry No. | | mm Hg @ 20 C
Acetic Acid (released during cure) 3.5max. 64-19-7 5. 11.4
Boiling Range: N/A - N/A deg F Freezing Point: N/A deg F Vapor Pressure: 11.4 mm @ 20 deg C Vapor Density: Heavier than air Specific Gravity: 1.04 H2O Soluble: Slight (0.1-1.0%) Evaporation Rate: Slower & Volatile by Volume: < 5 %
(relative to n-butyl acetate)
Appearance and Odor: Smooth paste with vinegar odor
------ Section IV - Fire and Explosion Hazard Data -------
Flash point: 300.0 deg F (Method Used) Tag
                          Explosive Limits: LEL UEL (%V in air) 5.4 16.0
FLAMMABILITY CLASSIFICATION
  OSHA: Combustible Liquid - Class IIIB
 DOT : Not regulated
EXTINGUISHING MEDIA:
  Foam, CO2, Dry Chemical
SPECIAL FIRE FIGHTING PROCEDURES:
  Wear self-contained breathing apparatus and protective clothing. Use
   water to cool exposed containers. Water stream directed into fire may
   cause frothing with subsequent spread of fire.
UNUSUAL FIRE AND EXPLOSION HAZARDS:
   Irritating and/or toxic gases or fumes may be generated by thermal
   decomposition or combustion. Closed containers may rupture or explode
   (due to pressure build-up) when exposed to extreme heat.
       ------- Section V - Toxicological Information
                                           | LD50 (mg/kg) | LC50 (ppm)
                            PEL | TLV (twa) | (rat) | (rbt) | (rat) | ppm |mg/m3| ppm | ORAL |DERMAL| INHAL
 ----- Ingredient -----
 Material Description
Acetic Acid
                             10. N/A 10.0 3310.0 1060.0 N/A
         THRESHOLD LIMIT VALUES: See Section V
EFFECTS OF OVEREXPOSURE:
ACUTE OVEREXPOSURE INFORMATION
   EYES: Severe irritant. May cause permanent corneal injury.
   SKIN: Moderate irritant. May cause redness and dermatitus.
   INHALATION: May cause irritation of respiratory tract.
        Overexposure may cause headache, nausea, and vomitting.
        Material aspirated into lungs may cause chemical pneumonitis.
```

INGESTION: May cause irritation of mouth, throat, and stomach. Symptoms include nausea, abdominal pain and possible collapse. \*Preexisting pulmonary and dermatological dysfunctions may be aggravated by exposure to hazardous components.

EMERGENCY AND FIRST AID PROCEDURES:

EYES: Flush with plenty of water at least 15 minutes. Obtain

immediate medical attention.

SKIN: Remove contaminated clothing. Wash affected area(s) thoroughly with scap and water. Consult a physician.

INHALATION: Remove to fresh air. If breathing is difficult, give

oxygen. Administer artificial respiration if not breathing.

Obtain medical attention.
INGESTION: DO NOT INDUCE VOMITTING.

Give water or milk if victim is conscious and not drowsy. Should vomitting occur, be sure to keep victim's head below hips to avoid aspiration of vomitus into the lungs. Obtain immediate medical attention.

-- Section VII - Reactivity Data ---

STABILITY: Stable

STABILITY CONDITIONS TO AVOID: Contamination with moisture

INCOMPATABILITY (MATERIALS TO AVOID CONTACT WITH): Not Applicable

HAZARDOUS DECOMPOSITION PRODUCTS: Acrid fumes. Oxides of carbon.

HAZARDOUS POLYMERIZATION: Will not occur POLYMERIZATION CONDITIONS TO AVOID: Not Applicable

STEPS FOR MATERIAL SPILLAGE:

Ventilate area. Wear appropriate protective equipment. Absorb with inert material. Sweep into containers with lids. Cover loosely and remove to appropriate waste area. Wash spill area with soap and water. WASTE DISPOSAL METHODS:

Review all local, state, and federal regulations concerning health and pollution for appropriate disposal procedures.

RESPIRATORY PROTECTION:

If the TLV is exceeded, if use is performed in a poorly ventilated confined space or area with limited ventilation, use NIOSH-approved respirator in accordance with 29 CFR 1910.134.

VENTILATION:

Local exhaust as needed to control vapor/dust levels to below recommended limits.

PROTECTIVE GLOVES:

Impervious rubber.

EYE PROTECTION:

Chemical safety goggles

OTHER PROTECTIVE EQUIPMENT: Clean protective clothing

----- Section X - Special Precautions --

HANDLING AND STORAGE PRECAUTIONS: FOR PROFESSIONAL USE ONLY

DO NOT TAKE INTERNALLY AVOID CONTACT WITH EYES, SKIN, AND CLOTHING AVOID BREATHING VAPOR USE ONLY WITH ADEQUATE VENTILATION

KEEP OUT OF REACH OF CHILDREN

```
==----- MATERIAL SAFETY DATA SHEET ==========
DATE PREPARED:
                                                                     SUPERCEDES:
 3-17-88
                                                                        8-8-86
                      ----- Manufacturer ----
                                                          EMERGENCY PHONE NUMBER
      : ChemRex Inc.
                                                           DAY: (303)-289-5651
NIGHT: CHEMTREC
ADDRESS: 6120 East 58th Avenue
ADDRESS: Commerce City , CO
ADDRESS:
                                                                   (800) -424-9300
ZIPCODE: 80022
                                                        INFORMATION PHONE NUMBER
                                                                  (303) -289-5286
           وجد وي بن بن و و نا وجد العوان في وي نوا وي و نوا بعد العوان و و نوا لكا و عدد العوان و نوا
NUMBER: 99737
                                                        H M I S Hazard Codes
                                                       Health: 2 Moderate
Flammability: 1 Slight
NAME : FIXMASTER Silicone Gasket Sealant
CLASS : Sealant
US KIT NUMBER: 09-9737
CANADA KIT NO: 70-9737
                                                         Reactivity: 0 Minimal
                                   Personal Protective Equipment: B
 ---- Ingredient ----
                              | Percent | C. A. S. | LEL | Vapor Pressure
                              |by weight|Registry No.| | mm Hg @ 20 C
Material Description
Acetic Acid (released during cure) 3.5max. 64-19-7
                                                                       11.4
        Boiling Range: N/A - N/A deg F Freezing Point: N/A deg F Vapor Pressure: 11.4 mm @ 20 deg C Vapor Density: Heavier than air Specific Gravity: 1.04 H20 Soluble: Slight (0.1-1.0%) Evaporation Rate: Slower % Volatile by Volume: < 5 %
Specific Gravity: 1.04
Evaporation Rate: Slower
                                         % Volatile by Volume:
(relative to n-butyl acetate)
Appearance and Odor: Smooth paste with vinegar odor
            ==== Section IV - Fire and Explosion Hazard Data ==
Flash point: 300.0 deg F Explosive Limits: LEL UEL (%V in air) (Method Used) Tag 5.4 16.0
FLAMMABILITY CLASSIFICATION
  OSHA: Combustible Liquid - Class IIIB
  DOT : Not regulated
EXTINGUISHING MEDIA:
   Foam, CO2, Dry Chemical
SPECIAL FIRE FIGHTING PROCEDURES:
   Wear self-contained breathing apparatus and protective clothing. Use
   water to cool exposed containers. Water stream directed into fire may
   cause frothing with subsequent spread of fire.
UNUSUAL FIRE AND EXPLOSION HAZARDS:
   Irritating and/or toxic gases or fumes may be generated by thermal
   decomposition or combustion. Closed containers may rupture or explode
    (due to pressure build-up) when exposed to extreme heat.
                --- Section V - Toxicological Information
                                                     | LD50 (mg/kg) | LC50 (ppm)
 ---- Ingredient -----
Material Description
                                  | PEL | TLV (twa) | (rat) | (rbt) | (rat) | ppm |mg/m3| ppm | ORAL |DERMAL | INHAL
                                           N/A 10.0 3310.0 1060.0
                                   10.
                  ---- Section VI - Health Hazard Data ----
EFFECTS OF OVEREXPOSURE: THRESHOLD LIMIT VALUES: See Section V
ACUTE OVEREXPOSURE INFORMATION
    EYES: Severe irritant. May cause permanent corneal injury.
    SKIN: Moderate irritant. May cause redness and dermatitus.
    INHALATION: May cause irritation of respiratory tract.
          Overexposure may cause headache, nausea, and vomitting.
          Material aspirated into lungs may cause chemical pneumonitis.
    INGESTION: May cause irritation of mouth, throat, and stomach.

Symptoms include nausea, abdominal pain and possible collapse.

*Preexisting pulmonary and dermatological dysfunctions may be aggravated by exposure to hazardous components.
```

SKIN: Remove contaminated clothing. Wash affected area(s) thoroughly with soap and water. Consult a physician. INHALATION: Remove to fresh air. If breathing is difficult, give oxygen. Administer artificial respiration if not breathing. Obtain medical attention. INGESTION: DO NOT INDUCE VOMITTING. Give water or milk if victim is conscious and not drowsy. Should vomitting occur, be sure to keep victim's head below hips to avoid aspiration of vomitus into the lungs. Obtain immediate medical attention. STABILITY: Stable STABILITY CONDITIONS TO AVOID: Contamination with moisture INCOMPATABILITY (MATERIALS TO AVOID CONTACT WITH): Not Applicable HAZARDOUS DECOMPOSITION PRODUCTS: Acrid fumes. Oxides of carbon. HAZARDOUS POLYMERIZATION: Will not occur POLYMERIZATION CONDITIONS TO AVOID: Not Applicable \_\_\_\_\_ STEPS FOR MATERIAL SPILLAGE: Ventilate area. Wear appropriate protective equipment. Absorb with inert material. Sweep into containers with lids. Cover loosely and remove to appropriate waste area. Wash spill area with soap and water. WASTE DISPOSAL METHODS: Review all local, state, and federal regulations concerning health and pollution for appropriate disposal procedures. ------ Section IX - Special Protection Information -----RESPIRATORY PROTECTION: If the TLV is exceeded, if use is performed in a poorly ventilated confined space or area with limited ventilation, use NIOSH-approved respirator in accordance with 29 CFR 1910.134. **VENTILATION:** Local exhaust as needed to control vapor/dust levels to below recommended limits. PROTECTIVE GLOVES: Impervious rubber. EYE PROTECTION: Chemical safety goggles OTHER PROTECTIVE EQUIPMENT: Clean protective clothing HANDLING AND STORAGE PRECAUTIONS: FOR PROFESSIONAL USE ONLY DO NOT TAKE INTERNALLY AVOID CONTACT WITH EYES, SKIN, AND CLOTHING AVOID BREATHING VAPOR USE ONLY WITH ADEQUATE VENTILATION KEEP OUT OF REACH OF CHILDREN OTHER INFORMATION: \*N/A = Information or data Not Available\*\*\*
\*\*NTP = National Toxicology Program \*\*IARC = International Agency for Research on Cancer \*\*ACGIH = American Conference of Governmental Industrial Hygienists \*\*OSHA = Occupational Safety and Health Administration \*\*\*PEL = Permissable Exposure Limit (8-hr. TWA) (OSHA)
\*\*\*TLV = Threshold Limit Value (8-hr. TWA) (ACGIH)

EMERGENCY AND FIRST AID PROCEDURES:

immediate medical attention.

EYES: Flush with plenty of water at least 15 minutes. Obtain

# 

### TRANSPORTATION

DOT HAZARD CLASS: Not Regulated UN/NA NUMBER: Not Regulated Not Regulated Not Regulated SHIPPING NAME: Not Regulated CLASS NUMBER: Not Regulated Not Regulated Not Regulated SUBSID. RISK: Not Applicable PACKING GROUP: Not Applicable Not Applicable Not Applicable

### REPORTING

CERCLA REPORTABLE QUANTITY: As product: none As Wast SARA TITLE III EMERGENCY RESPONSE REPORTABLE QUANTITY: none SARA TITLE III INVENTORY REPORTING (Y/N): Y As Waste: none

SARA TITLE III HAZARD CLASS(ES): acute health hazard

COMPONENTS ON TSCA INVENTORY (Y/N): y

EPA RCRA WASTE CLASS: Not Regulated EPA RCRA WASTE NUMBER: Not Regulated

CALIFORNIA LIST LAND BAN (Y/N): Not Applicable

This information is furnished without warranty, representation, or license of any kind, except that this information is accurate to the best of Rexnord's knowledge, or is obtained from sources belived by Rexnord to be accurate. No warranty is expressed or implied regarding the accuracy of this information or the results to be obtained from its use thereof. Rexnord assumes no responsibility for injuries proximately caused by use of the Material if reasonable safety procedures are not followed as stipulated in this Data Sheet. Additionally, Rexnord assumes no responsibility for injuries proximately caused by abnormal use of the Material even if reasonable safety procedures are followed. Buyer assumes the risk in its use of the Material.

620

# A. P. GREEN INDUSTRIES, INC.

MEXICO, MISSOURI 65265 U.S.A.

April 19, 1988

# MATERIAL SAFETY DATA SHEET

A. P. Green Industries, Inc. Green Boulevard, Mexico, Missouri 65265 Telephone Number -- 314-473-3626

# SECTION I

PRODUCT NAMES:

NO. 36 REFRACTORY CEMENT

PRODUCT TYPE:

Refractory Mortar

CHEMICAL FAMILY:

 $SiO_2 = 23-27\%$ ,  $Al_2O_3 = 65-69\%$   $Fe_2O_3 = 1-2\%$ ,  $NaRO^3 = 2-3\%$ 

FORMULA: Proprietary

# SECTION 11

# PRODUCT HAZARDOUS INGREDIENTS

Chemical	TLV-TWA	CAS #
Cristobalite (SiO <sub>2</sub> ) (<8%)	0.05 mg/m <sup>3</sup> * Respirable Dust	14464-46-1
Quartz (SiO <sub>2</sub> ) ( <s%)< td=""><td>0.1 mg/m<sup>3</sup>* Respirable Dust</td><td>14808-60-7</td></s%)<>	0.1 mg/m <sup>3</sup> * Respirable Dust	14808-60-7
Liquid Sodium Silicate (15-22%)	(None)	6834-92-0

<sup>\*</sup> Source: American Conference of Governmental Industrial Hygienists, 1987-1988.

### SECTION III

# PHYSICAL DATA

SOLUBILITY IN WATER: Nil

SPECIFIC GRAVITY: 2.2

MELTING POINT: Not Applicable

APPEARANCE AND ODOR: Buff to gray granular paste; no odor

Material Safety Data Sheet Product: NO. 38 REFRACTORY CEMENT

Page 2

# SECTION IV

APR 1 5 1988

# PIRE AND EXPLOSION HAZARD DATA

PLASH POINT: None

EXTINGUISHING MEDIA: Not Combustible

SPECIAL PIRE PIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

# SECTION V

# HEALTH HAZARD DATA

# EFFECT OF OVEREXPOSURE:

EYES ACUTE: Dust or aggregate particles can cause mechanical

irritation. Liquid sodium silicate can cause eye

injury or irritation.

CHRONIC: Unknown.

SKIN ACUTE: Can cause mechanical abrasion. Liquid sodium

silicate can cause skin drying and chapping.

CHRONIC: Unknown.

INHALATION ACUTE: Dust, if present, may cause upper respiratory

irritation.

CHRONIC: Dust may cause lung damage if inhaled on a long-

term basis.

INGESTION ACUTE: Unknown

CHRONIC: Unknown.

# EMERGENCY AND FIRST AID PROCEDURES:

EYES Immediately flush eyes with water for 15 minutes. Obtain

prompt medical attention.

SKIN Wash exposed areas promptly. Consult physician if irritation

occurs.

INHALATION Remove to fresh air. Seek medical attention.

INGESTION Contact physician immediately. Do not induce vomiting unless

instructed to do so by physician.

Material Safety Data Sheet
Product: NO. 36 REFRACTORY CEMENT

Page 3

· SECTION VI

MFR 1 5 1988

# REACTIVITY DATA

STABILITY: Stable

INCOMPATIBILITY: None Known

RAZARDOUS POLYMERIZATION: Will Not Occur

# SECTION VII

# SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Shovel up and place in a container.

WASTE DISPOSAL METHOD: May be disposed of in an approved landfill, in accordance with local, state, and federal regulations.

### SECTION VIII

# SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Use NIOSH approved respirator when working around dried material or when removing this product after service.

VENTILATION: General mechanical ventilation is adequate.

EYE PROTECTION: Goggles or safety glasses with side shields should be worn.

OTHER PROTECTION: Use of rubber gloves and long-sleeved and long-legged clothing protects hands, arms, and legs from skin contact. Safety shoes should be worn to protect feet from accidentally dropped containers of mortar.

Material Safety Data Sheet Product: NO. 36 REFRACTORY CEMENT

Page 4

APR 1 9 1988

# , SECTION IX

# SPECIAL PRECAUTIONS

warning: This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pheumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as a Class 2A carcinogen. Their study concluded that sufficient evidence for carcinogenicity exists in experimental animals and that limited evidence for carcinogenicity exists in humans.

NIOSH approved respirators should be worn any time that refractories are torn out after service. While some respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith

Title: Senior Technical Consultant

Phone: (314) 473-3392



#19

# North American Refractories Co.

06551 00

900 Hanna Building 1422 Euclid Avenue Cleveland, Ohio 44118 216/621-5200

# NORTH AMERICAN REFRACTORIES PRODUCT SAFETY DATA SHEET

MANUFACTURER

MSDS # 3046~00

NORTH AMERICAN REFRACTORIES

Vendor:

Emergency Phone Number East (814) 236-3890 West (415) 432-4741

Date Issued: 04/21/88 Date Revised: 05/22/86

Product Type: Refractory Castable / Gun Material

Trade Name: SHASTAKAST

\*\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION [ -- PRODUCT IDENTIFICATION \*\*\*\*\*\*\*\*\*\*

Chemical Name: High Alumina Castable Chemical Family: Al203, Si02, Ca0

\*\*\*\*\*\*\*\*\*\*\*\* SECTION II ~ CHEMICAL COMPOSITION \*\*\*\*\*\*\*\*\*\*

Hazardous Ingredients: CAS Number: PCT:

Crystalline Silica including: N/A less than 20%

 Quartz
 14808-60~7

 Cristobalite
 14464-46-1

 Tridymite
 15468-32-3

Gther Ingredients: CAS Number: PCT:

Alumina Silicate 66402-68-4 less than 80% Hydrous Alumina Silicate 1332-58-7 less than 5% Hydraulic Setting Coment 12005-57-1 less than 25%

\*\*\*\*\*\*\*\*\*\* \*\*\*\*\* SECTION III - PHYSICAL DATA \*\*\*\*\*\*\*\*\*\*\*\*

Appearance and Odor: Tan, granular, dry mixture, odorless.

\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION IV - FIRE AND EXPLOSION HAZARD \*\*\*\*\*\*\*\*

Flammability: This product is non-flammable and will not support combustion.

1808 # 3046~00 cont.

page 2

## North American Refractories Co.

900 Hanna Building 1422 Euclid Avenue Cleveland, Ohio 44115 216/621-5200

\*\*\*\*\*\*\*

SECTION V - HEALTH HAZARD

\*\*\*\*\*\*\*

Threshold Limit Value: For respirable dust containing crystalline silica:

OSHA PEL: 10 divided by (%quartx + 2(%tridymite)

+ 2(%cristobalite)) expressed as mg/m3.

ACCIH: Quartz.....0.1mg/m3

Cristobalite...0.05mg/m3

Tridymite.....0.05mg/m3

Effects of Overexposure: Cement may cause irritation to skin and ayes.

## CRYSTALLINE SILICA:

Chronic overexposure to dust containing respirable sized crystalline silica (quartz, cristobalite, and tridymite) can cause delayed lung injury (silicosis).

Points of attack: Respiratory system and lungs.

Route of entry: Inhalation.
Inhalation of dust containing crystalline silica may contribute to pre-existing pulmonary diseases such as asthma and lung disorders associated with the smoking of tobacco.

Some recent animal studies have caused the International Agency for Research on Cancer (IARC) to categorize crystalline silica as a 2A carcinogen. A 2A carcinogen is one which:

- there is sufficient evidence for the carcinogenicity to experimental animals.
- (2) there is limited evidence of the carcinggenicity to humans.

For more information on crystalline milica refer to:

- (1) IARC Monograph, Volume 42
- (2) NIOSH Document No. 75-120

With the exception of crystalline silica listed above,

No ingredient in this product is found on either the Federal OSHA, NTP, or IRAC list of carcingens.

Emergency and First Aid Data:

Skin: Wash thoroughly with soap and water.

Inhalation: Remove to fresh air.

Eyes: Flush with water for 15 minutes and get

medical help.

\*\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION VI - REACTIVITY DATA

\*\*\*\*\*\*\*\*

Stability and Reactivity: This product is stable and non-reactive.

Hazardous Decomposition: Crystalline silica levels in used refractories

may be higher or lower than as-shipped depending

on service conditions. Hygiene monitoring must



## North American Refractories Co.

cont.

900 Hanna Building 1422 Euclid Avenue Cleveland, Ohio 44115 216/621-5200

be done to insure the proper employee protection during tearout.

\*\*\*\*\*\* SECTION VII - SPILL AND LEAK PROCEDURES \*\*\*\*\*\*\*\*\*\*

Steps to be Taken in Case of a Spill:

Avoid generating dust exposure during cleanup.

Waste Disposal Method: Dispose of material according to local, state or federal regulations and as final used condition of the product dictates.

\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION VIII - INDUSTRIAL HYGIENE INFORMATION \*\*\*\*\*

Ventilation: Local exhaust recommended to maintain exposures below TLV.

Respiratory Protection: NIOSH approved dust type for exposures above TLV.

Protective Gloves: Impervious gloves recommended.

Eye Protection: Recommended.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION IX - SPECIAL PRECAUTIONS \*\*\*\*\*\*\*\*\*

Special Precautions: Avoid dust generation.

Precautionary Labeling: Product contains crystalline silica and

hydraulic setting cement.

WARNING: Prolonged inhalation of product

dust may cause delayed lung injury (silicosis). Contact may cause irritation to eyes and skin.

P NUMBER: SC-000-016

ATE: 05/03/88

RODUCT NAME 1: NICKEL ALLOYED STEEL CASTINGS RODUCT NAME 2: CLASS 3 <1% CR AND 1-10% NI

DUCT NAME 3: \*RSDS\*

UTHOR(S):

OMMENT:

ENDOR: STEEL FOUNDERS SOCIETY OF AMERICA

IVISION:

440-44-0

DDRESS: 455 STATE STREET

ITY, ST, ZIP: DES PLAINES, ILLINOIS 60016

CARBON

HONE:

AS NO. NAME

4-4 CAPLAN-ANDERSON

303-86-2 BORON OXIDE

440-47-3 CHROMIUM METAL

440-50-8 COPPER

439-89-6 IRON

439-96-5 MANGANESE

439-98-7 MOLYBDENUM

440-02-0 NICKEL

723-14-0 PHOSPHORUS 440-21-3 SILICON

704-34-9 SULFUR

3463-67-7 TITANIUM DIOXIDE

440-33-7 TUNGSTEN

314-62-1 VANADIUM OXIDE

SER ID NAME

-000-018 STEEL FOUNDERS SOCIETY OF AMERICA

TATES

\* NONE \*\*

MATERIAL SAFETY DATA SHEET (MSDS)

SC-000-016 REV. 6 DATE 05/03/88 CODE 24-4

CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200

"HAZARD COMMUNICATION" AND TO VARIOUS STATE

"EMPLOYEE RIGHT TO KNOW" LAWS

COPYRIGHT 1988 STEEL FOUNDERS SOCIETY OF AMERICA

SECTION I PRODUCT IDENTIFICATION

This MSDS supplied for: Nickel Alloyed

ASTM No. ACI alloy designation (Grades)

A128/A128M-84

A217/A217M-84 WC4

A352/A352M-84 LC2, LC2-1, LC3, LC4, LC9

A487/A487M-84 10N, 11N, 12N, 13N, 16N, 7Q, 10Q, 11Q,

120, 130, 140

A732/A732M-84 9Q, 10Q, 11Q

A757/A757M-84 B2N, B2Q, B3N, B3Q, B4N, B4Q, C1Q

MIL-S-870B (SHIPS)

MIL-S-23008C HY-80, HY-100

VENDOR NAME AND ADDRESS:

Spokane Steel Foundry

P.O. Box 3305

Spokane, Washington 99220

EMERGENCY PHONE NUMBER: (509) 924-0440

FIRE HAZARD CLASS: HEALTH: 0 FLAMMABILITY: 0 REACTIVITY: 0

THE FOURTH DIAMOND:

ANSI: WARNING! WELDING, CUTTING, OR GRINDING ON THIS CASTING WILL GENERATE TOXIC DUST OR FUMES. SOME COMPONENTS ARE CANCER HAZARD BASED ON TESTS WITH LABORATORY ANIMALS. OVEREXPOSURE MAY CREATE CANCER RISK.

N/E means none established. N/A means not applicable. N/D means no data available.

## SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Boron		0.002-0.006	•	
(as boron oxide)	1303-86-2		10 mg/cu.m	15 mg/cu.m
Carbon	7440-44-0	0.12-1.3	N/E	N/E
Chromium*	7440-47-3	0-1.85	0.5 mg/cu.m	1 mg/cu.m
Copper* (As dust)	7440-50-8	0-0.50	1.0 mg/cu.m	1.0 mg/cu.m
(As fume)			0.2 mg/cu.m	0.1 mg/cu.m
Iron	7439-89-6	balance		
(as iron oxide fume)	1309-37-1		5 mg/cu.m	10 mg/cu.m
Manganese*(As dust)	7439-96-5	0.40-14.0	C 5 mg/cu.m	C 5 mg/cu.m
(As fume)			1 mg/cu.m	C 5 mg/cu.m
Molybdenum	7439-98-7	0-1.20	10 mg/cu.m	15 mg/cu.m
Nickel*	7440-02-0	0-10.0	1 mg/cu.m	l mg/cu.m
Phosphorus	7723-14-0	0.02-0.07	0.1 mg/cu.m	0.1 mg/cu.m
Silicon	7440-21-3	0.30-1.00	10 mg/cu.m	15 mg/cu.m
			(as nuisance	dust)
Sulfur	7704-34-9	0-0.05	N/E	N/E
Titanium		0-0.02		
(as titanium dioxide)	13463-67-7		10 mg/cu.m	15 mg/cu.m
Tungsten	7440-33-7	0-0.10	5 mg/cu.m	N/E
Vanadium**		0-0.10		
(as vanadium oxide)	1314-62-1	•		
(As dust)			0.05 mg/cu.m	
(As fume)			0.05 mg/cu.m	0.1 mg/cu.m

C means ceiling limit. These are limits which should not be exceeded, even for a short time. All other are 8 hr Time-weighted average concentrations.

Elements having a listed percentage greater than zero will be present in all grades. Those having a value of "0" may not be present in certain grades. Refer to Steel Founders' Society of America "Steel Castings Handbook" Supplement 2 for specifications on a particular ASTM alloy and grade.

Certain forms of Nickel have been shown to cause cancer in laboratory animals. However its potential to cause cancer in humans has not been determined.

Water insoluble hexavalent chromium is classified as a suspect human carcinogen by the American Conference of Governmental Industrial Hygienists (ACGIH). Welding or flame cutting may convert a small percentage of the total chromium in welding fume to the water insoluble hexavalent form. There is no water insoluble hexavalent chromium in the solid alloy.

N/E means none established. N/A means not applicable. N/D means no data available.

\*This constituent, a toxic chemical, makes this product subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. Quantity thresholds for this chemical, below which reporting of releases is not required, are 50,000 pounds for 1988, and 25,000 pounds for 1989 and subsequent years. Chemicals marked \*\*are reportable only if in the form of dust or fume.

## SECTION III - OVERVIEW

There are no chemical hazards from these castings in solid form at room temperature.

Dust or fumes are generated by machining, grinding, or welding on these castings. Since the castings contain a high percentage of iron, most of the dust or fume will be iron or iron oxide. There is no TLV for iron dust, but available information indicates that a concentration of 10 mg/cu.m., as if it were a nuisance dust, will serve as a guideline until a TLV is established.

Overexposure to iron oxide fume over a long time can cause siderosis, sometimes called "iron pigmentation" of the lung. It can be seen on a chest x-ray but causes little or no disability. Also see the Material Safety Data Sheet for the welding rod being used.

Since these castings contain up to 10 percent nickel, airborne contaminants from machining or welding will contain nickel dust or fume. If total welding fume is adequately controlled, nickel will also be controlled.

Some forms of nickel have been found to cause cancer in animals. One form, nickel subsulfide, which was present in an old smelting process no longer used, apparently caused nasal cancer in humans. Since then, studies have shown that the potential for ordinary forms of nickel and its oxides to cause cancer in humans is very weak, if it exists at all.

Some grades contain manganese. Long-term overexposure to manganese dust or fume can cause manganese poisoning. If welding or flame cutting fume is controlled to the TLV for total fume, the manganese fume will be adequately controlled.

Grinding on castings that have not been cleaned or that contain embedded sand may generate significant amounts of dust containing free silica, which can cause silicosis. The use of ventilation for control of metal dust and fume will also control airborne silica.

Boron, carbon, chromium, copper, molybdenum, phosphorus, silicon, sulfur, titanium, tungsten, and vanadium are also contained in the castings in low amounts. Overexposure to these would not be likely. If the airborne concentration of nickel is controlled below its TLV and PEL, these minor constituents would also be adequately controlled.

## SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Solid, silver gray in color, no odor

BOILING POINT: variable depending on casting grade

VAPOR PRESSURE: N/A
VAPOR DENSITY: N/A
SOLUBILITY IN WATER: N/A
SPECIFIC GRAVITY: 7.86 for iron

PERCENT VOLATILE BY VOLUME: N/A

EVAPORATION RATE: N/A

## SECTION V - FIRE AND EXPLOSION DATA

Castings will not burn or explode.

## SECTION VI - HEALTH HAZARD DATA

EYES: Metal particles in the eyes may cause irritation if not

removed. SKIN: None known.

BREATHING: Breathing high concentrations of nickel dust or fume may cause deep lung irritation. Some forms of nickel can cause cancer; refer to the Overview of this MSDS.

Breathing excessive amounts of silica dust for a long time can cause silicosis. Silicosis causes shortness of breath, reduced capacity to do work, and weakens the defenses against other lung diseases.

ulswallowing: N/A

NOISE: Grinding or machining castings is noisy. The OSHA limit for noise averaged over 8 hours is 90 decibels (dBA), hearing conservation program required if exposure is over 85 dBA. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

N/E means none established. N/A means not applicable. N/D means no data available.

IF IN EYES: Metal particles should be removed by trained individuals such as a nurse or physician. IF ON SKIN: N/A IF BREATHED: (Fumes from welding): Move to fresh air.
IF SWALLOWED: N/A .\_\_\_\_\_ SECTION VII - REACTIVITY DATA HAZARDOUS POLYMERIZATION: Will not occur. STABILITY: Stable. INCOMPATIBILITY: Iron may cause violent decoposition of hydrogen peroxide (52%) by weight or greater. SECTION VIII - SPILL OR LEAK PROCEDURES STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: If damaged, return castings to vendor or send to scrap reclaimer. Collected dust from machining, welding, etc. may be classed as a "hazardous waste" depending on circumstances. Consult local authorities regarding disposal. SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: Wear a NIOSH approved respirator for dusts or fume if concentrations exceed the TLV or PEL.

VENTILATION: Provide general ventilation and/or local exhaust if necessary to maintain concentrations below the TLVs.

PROTECTIVE GLOVES: Work gloves advisable for handling castings.

EYE PROTECTION: Safety glasses with side shields and/or face shields for particles (grinding). Welding goggles or helmet for welding.

OTHER PROTECTIVE EQUIPMENT: Wear a protective apron and gauntlets if arc-air gouging or cutting, or welding on castings.

If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

N/E means none established.

N/A means not applicable.

N/D means no data available.

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: No special precautions.

INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE RELIABLE AND IS ACCURATE AND RELIABLE TO THE BEST OF OUR KNOWLEDGE AND BELIEF BUT IS NOT GUARANTEED TO BE SO.

N/E means none established. N/A means not applicable. N/D means no data available.

ATE: 05/03/88

RODUCT NAME 1: CHROMIUM ALLOYED STEEL CASTINGS

RODUCT NAME 2: CLASS 2 (CHROMIUM ALLOYED 1-10% CR & <1% NI)

AOR(S):

DMMENT: ENDOR:

STEEL FOUNDERS SOCIETY OF AMERICA

IVISION:

DDRESS: 455 STATE STREET

ITY, ST, ZIP: DES PLAINES, ILLINOIS 60016

HONE: 312-299-9160

AS NO. NAME

4-4 CAPLAN-ANDERSON

440-44-0 CARBON

440-47-3 CHROMIUM METAL

440-50-8 COPPER

439-89-6 IRON

439-96-5 MANGANESE

439-98-7 MOLYBDENUM

440-02-0 NICKEL

723-14-0 PHOSPHORUS

440-21-3 SILICON 704-34-9 SULFUR

440-33-7 TUNGSTEN

314-62-1 VANADIUM OXIDE

SER ID NAME

-000-018 STEEL FOUNDERS SOCIETY OF AMERICA

TATES

\* NONE \*\*

MATERIAL SAFETY DATA SHEET (MSDS) SC-000-019 REV. 2 CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200 "HAZARD COMMUNICATION" AND TO VARIOUS STATE "EMPLOYEE RIGHT TO KNOW" LAWS

COPYRIGHT 1988 STEEL FOUNDERS SOCIETY OF AMERICA

SECTION I PRODUCT IDENTIFICATION

This MSDS supplied for: Chromium Alloyed Steel Castings

ACI alloy designation (Grades) ASTM No.

A128/128M-84

WC6, WC9, WC11, C5, C12 A217/A217M-84

A356/A356M-84 6, 8, 9, 10 ·

C23, C24 A389/A389M-84

CP5, CP5b, CP7, CP9, CP11, CP12 A426-80

CP21, CP22

8N, 9N, 8Q, 9Q, A487/A487M-84

CA-2, CH-12, CH-13, CO-1 A597/A597M-84

7Q, 8Q, 12Q, 15A A732/A732M-84

A757/A757M-84 D1N1, D1Q1, D1N2, D1Q2, D1N3, D1Q3

MIL-S-15464B 1, 2, 3

(SHIPS)

VENDOR NAME AND ADDRESS:

Spokane Steel Foundry

P.O. Box 3305

Spokane, Washington 99220

EMERGENCY PHONE NUMBER:

(509) 924-0440

FIRE HAZARD CLASS: HEALTH: 0 FIRE: 0 REACTIVITY: 0

THE FOURTH DIAMOND:

ANSI: WARNING! WELDING, CUTTING, OR GRINDING ON THIS CASTING WILL

GENERATE TOXIC DUST OR FUMES.

N/E means none established. N/A means not applicable. N/D means no data available.

## SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Carbon	7440-44-0	0.20-1.35	N/E	N/E
Chromium*	7440-47-3	0.75-10.0	0.5 mg/cu.m	1 mg/cu.m
Chromium (VI)***		•		
(certain insoluble for	ms)		0.05 mg/cu.m	N/E
Copper* (As dust)	7440-50-8	0-0.50	1.0 mg/cu.m	1.0 mg/cu.m
(As fume)			0.2 mg/cu.m	0.1 mg/cu.m
Iron (As fume)	7439-89-6	balance	5 mg/cu.m	10 mg/cu.m
Manganese*(As dust)	7439-96-5	0.30-14.0	C 5 mg/cu.m.	C 5 mg/cu.m
(As fume)			1 mg/cu.m	C 5 mg/cu.m
Molybdenum	7439-98-7	0-1.75	10 mg/cu.m	15 mg/cu.m
Nickel*	7440-02-0	0-0.50	l mg/cu.m	1 mg/cu.m
Phosphorus	7723-14-0	0.025-0.07	0.1 mg/cu.m	0.1 mg/cu.m
Silicon	7440-21-3	0.20-2.00	10 mg/cu.m	15 mg/cu.m
		***************************************	(as nuisance	
Sulfur	7704-34-9	0.025-1.00	N/E	N/E
Tungsten	7440-33-7		5 mg/cu.m	N/E
Vanadium**	7440 00 1	0-1.20	. J mg/ Curm	••/ =
(as vanadium oxide)	1314-62-1	0.1.20		
•	T3 14 - 04 ~ 1		0.05 mg/cu.m	0.5 mg/cu m
(As dust)				
(As fume)			0.05 mg/cu.m	0.1 mg/cu.m

C means ceiling limit. These are limits which should not be exceeded, even for a short time. All other are 8 hr Time-weighted average concentrations.

Elements having a listed percentage greater than zero will be present in all grades. Those having a value of "0" may not be present in certain grades. Refer to Steel Founders' Society of America "Steel Castings Handbook" Supplement 2 for specifications on a particular ASTM alloy and grade.

\*This constituent, a toxic chemical, makes this product subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. Quantity thresholds for this chemical, below which reporting of releases is not required, are 50,000 pounds for 1988, and 25,000 pounds for 1989 and subsequent years. Chemicals marked \*\*are reportable only if in the form of dust or fume.

\*\*\* Water insoluble hexavalent chromium is classified as a human carcinogen by the American Conference of Governmental Industrial Hygienists (ACGIH). Approximately 66% of the total chromium in welding fume is hexavalent, and only 5% of that is insoluble. Overexposure to hexavalent chromium is not likely if general welding fume is controlled. (The alloy and its dust does not contain insoluble hexavalent chromium.)

N/E means none established. N/A means not applicable. N/D means no data available.

## SECTION III - OVERVIEW

There are no chemical hazards from these castings in solid form at room temperature.

Dust or fumes are generated by machining, grinding, or welding on these castings. Since the castings contain a high percentage of iron, most of the dust or fume will be iron or iron oxide. There is no TLV for iron dust, but available information indicates that a concentration of 10 mg/cu.m.; as if it were a nuisance dust, will serve as a guideline until a TLV is established.

Overexposure to iron oxide fume over a long time can cause siderosis, sometimes called "iron pigmentation" of the lung. It can be seen on a chest x-ray but causes little or no disability. Also see the Material Safety Data Sheet for the welding rod being used.

Since these castings contain up to 10 percent chromium, airborne contaminants from machining or welding will contain chromium dust or fume. If total welding fume is adequately controlled, chromium will also be controlled.

Welding or flame cutting may convert a small fraction of the chromium to the water insoluble hexavalent (carcinogenic) form.

These casting contain up to 0.5% nickel. Some forms of nickel have been found to cause cancer in animals. One form, nickel subsulfide, which was present in an old smelting process no longer used, apparently caused nasal cancer in humans. Since then, studies have shown that the potential for ordinary forms of nickel and its oxides to cause cancer in humans is very weak, if it exists at all.

Some grades contain moderate levels of manganese. Long term overexposure to manganese dust or fume can cause manganese poisoning. If welding or flame cutting fume is controlled to the TLV for total fume, the manganese fume will also be controlled.

Grinding on castings that have not been cleaned or that contain embedded sand may generate significant amounts of dust containing free silica, which can cause silicosis.

Carbon, copper, molybdenum, phosphorus, silicon, sulfur, tungsten, and vanadium are also contained in the castings in low amounts. Overexposure to these would not be likely. If airborne concentrations of total dust and fume are controlled to levels below their respective TLVs and PELs, these minor constituents would also be adequately controlled.

SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Solid, silver gray in color, no odor

BOILING POINT: variable depending on casting grade

VAPOR PRESSURE: N/A VAPOR DENSITY: N/A

SOLUBILITY IN WATER: N/A

SPECIFIC GRAVITY: 7.86 for iron PERCENT VOLATILE BY VOLUME: N/A

EVAPORATION RATE: N/A

SECTION V - FIRE AND EXPLOSION DATA

Castings will not burn or explode.

SECTION VI - HEALTH HAZARD DATA

EYES: Metal particles in the eyes may cause irritation if not removed.

SKIN: None known.

BREATHING: Prolonged or repeated overexposure to iron oxide produced in grinding or welding may cause siderosis. Overexposure to manganese dust can cause manganism. Symptoms of manganism are sleepiness, weakness in the legs, emotional disturbances, uncontrollable laughter, and spastic gait. Breathing excessive amounts of silica dust for a long time can cause silicosis. Silicosis causes shortness of breath, reduced capacity to do work, and weakens the defenses against other lung diseases. SWALLOWING: N/A

NOISE: Grinding or machining castings is noisy. The OSHA limit for noise averaged over 8 hours is 90 decibels (dBA), hearing conservation program required if exposure is over 85 dBA. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

IF IN EYES: Metal particles should be removed by trained individuals such as a nurse or physician.

IF ON SKIN: N/A
IF BREATHED: (Fumes from welding): Move to fresh air.
IF SWALLOWED: N/A

N/E means none established. N/A means not applicable. N/D means no data available.

## SECTION VII - REACTIVITY DATA HAZARDOUS POLYMERIZATION: Will not occur. STABILITY: Stable. INCOMPATIBILITY: Chromium metal dust may burn or explode when in contact with ammonium nitrate. SECTION VIII - SPILL OR LEAK PROCEDURES STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: If damaged, return castings to vendor or send to scrap reclaimer. Collected dust from machining, welding, etc. may be classed as a "hazardous waste" depending on circumstances. Consult local authorities regarding disposal. SECTION IX - PROTECTIVE EQUIPMENT TO BE USED RESPIRATORY PROTECTION: Wear a NIOSH approved respirator for dusts or fume if concentrations exceed the TLV or PEL. <u>VENTILATION:</u> Provide general ventilation and/or local exhaust if necessary to maintain concentrations below the TLVs. PROTECTIVE GLOVES: Work gloves advisable for handling castings. EYE PROTECTION: Safety glasses with side shields and/or face shields for particles (grinding). Welding goggles or helmet for welding. OTHER PROTECTIVE EQUIPMENT: Wear a protective apron and gauntlets if arc-air gouging or cutting, or welding on castings. If noise is at or above 90 dBA you should wear ear muffs or ear plugs. SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: No special precautions.

INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE RELIABLE AND IS ACCURATE AND RELIABLE TO THE BEST OF OUR KNOWLEDGE AND BELIEF BUT IS NOT GUARANTEED TO BE SO.

N/E means none established. N/A means not applicable. N/D means no data available.



# MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 1 OF 3

EP MANUFACTURING COMPANY

ST IN MAINTENANCE PRODUCTS

DATE : 06/15/88 ZEP TNT

SUPERSEDES: 02/08/87 PRODUCT NUMBER: 0376

SECTION I - EMERGENCY CONTACTS

ZEP MANUFACTURING COMPANY NON-OFFICE HOURS, WEEKENDS, AND HOLIDAYS: AREA CODE 404 P.O. BOX 2015 435-2973, 996-0899, 252-1587, 351-2952, 445-9226

ATLANTA, GEORGIA 30301 LOCAL POISON CONTROL CENTER ..............................

TELEPHONE (404)352-1680 TRANSPORTATION EMERGENCY

BETWEEN 8:00A.M.-5:00P.M. CHEMTREC: TOLL FREE 1-800-424-9300 ALL CALLS RECORDED (EASTERN TIME ZONE) DISTRICT OF COLUMBIA (202)483-7616 ALL CALLS RECORDED

SECTION II - HAZARDOUS INGREDIENTS

TLV EFFECTS % IN
DESIGNATIONS (PPM) (SEE REVERSE) PROD.
\*\* TETRASOBIUM ETHYLENEDIAMINE TETRAACETATE \*\* N/D IRR 5-10
ethylenedinitrilo tetra-acetic acid; EDTA; CAS#

64-02-8; RTECS# AH4025000; OSHA PEL-N/D.

\*\* SODIUM METASILICATE \*\* silicic acid (H2-Si-03) di- N/D COR < 5

sodium salt; water slass; CAS# 6834-92-0; RTECS#

VV9275000; OSHA Dust Limit-2ms/m3 (for powders only).

\*\* ALCOHOLS, C9-11, ETHOXYLATED \*\* linear primary N/D IRR SEN < 5

alcohol ethoxylate (6 moles) EO); CAS# 68439-46-3;

RTECS# NONE; OSHA PEL N/D

SPECIAL NOTE: ADVERSE HEALTH EFFECTS WOULD NOT BE EXPECTED UNDER RECOMMENDED CONDITIONS OF USE SO LONG AS PRESCRIBED SAFETY PRECAUTIONS ARE PRACTICED.

SECTION III - HEALTH HAZARD DATA

ACUTE EFFECTS OF OVEREXPOSURE:

PRODUCT IN CONCENTRATED FORM IS A SEVERE EYE IRRITANT. OVER-EXPOSURE MAY LEAD TO EYE TISSUE DAMAGE WHICH CAN BE PERMANENT. SKIN CONTACT MAY PRODUCE IRRITATION.

## NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.



...ultase (etg

BUT MERCHANI DURB BARBATTA

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows: ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen-Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible-At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive-Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues:

Est'd: Éstimated.

FBL: Flammable—At temperatures under 100°F., chemical gives off enough vapor to ignition is present.

HTX: Highly Toxic—The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more: OCOLLO MHO MECOLO MORNING: ING: Ingestion—A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation—A primary route of exposure through breathing of vapors (see below)

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during MINDER NONCE FOR PEL NIC any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value-A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This timeweighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry-this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalizedsystemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death.

Do not attempt to clean since residue is difficult to remove, "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

DISCLAIMER

All statements, technical information and recommendations contained herein are pased on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.





# MATERIAL SAFETY DATA SHEET

### AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 2 OF 3

ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS

: 06/15/88 ZEP TNT DATE

SUPERSEDES: 02/08/87 PRODUCT NUMBER: 0376

SECTION III - HEALTH HAZARD DATA (CONTINUED)

CHRONIC EFFECTS OF OVEREXPOSURE:

REPEATED OR PROLONGED SKIN CONTACT MAY PRODUCE CHRONIC INFLAMMATION OR DERMATIT-IS, CHARACTERIZED BY REDNESS, SCALING, OR ITCHING. REPEATED EYE EXPOSURE MAY PRODUCE CHRONIC INFLAMMATION OF THE EYE OR CORNEAL DAMAGE.

NONE OF THE INGREDIENTS ARE LISTED AS CARCINOGENS BY IARC, NTP, OR OSHA.

EST'D PEL/TLV: NOT ESTABLISHED PRIMARY ROUTES OF ENTRY: ING.

HMIS CODES: HEALTH 2; FLAM. 0; REACT. 0; PERS. PROTECT. B ; CHRONIC HAZ. YES

FIRST AID PROCEDURES:

EYE PROTECTION

SKIN : IMMEDIATELY FLUSH CONTAMINATED SKIN WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. GET MEDICAL ATTENTION IF IRRITATION DEVELOPS.

EYES : IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, OC-

CASIONALLY LIFTING UPPER AND LOWER LIDS. GET MEDICAL ATTENTION AT ONCE.

INHALE: MOVE EXPOSED PERSON TO FRESH AIR. IF IRRITATION PERSISTS,

GET MEDICAL ATTENTION PROMPTLY.

INGEST: IF THIS PRODUCT IS SWALLOWED, DO NOT INDUCE VOMITING. IF VICTIM IS

CONSCIOUS GIVE PLENTY OF WATER TO DRINK, GET MEDICAL ATTENTION AT ONCE.

SECTION IV -- S P E C I A Ł P R O T E C T I O N I N F O R M A T I O N

PROTECTIVE CLOTHING : WEAR RUBBER OR NEOPRENE GLOVES AND A FACE SHIELD WHEN USING, A RUBBER APRON AND BOOTS ARE STRONGLY RECOMMENDED

: WEAR SPLASH-PROOF SAFETY GOGGLES ESPECIALLY IF CONTACT

(TCC )

LENSES ARE WORN.

RESPIRATORY PROTECTION: KEEP FACE AWAY FROM SPRAY MIST AND DO NOT BREATHE

VAPORS.

VENTILATION : VENTILATION SHOULD BE EQUIVALENT TO OUTDOORS. USE EX-

HAUST FANS AND OPEN WINDOWS IN ENCLOSED SPACES.

SECTION V - PHYSICAL DATA

BOILING POINT (F) : 220F SPECIFIC GRAVITY : 1.05

PERCENT VOLATILE BY VOLUME (%) : ~76 VAPOR PRESSURE(MMHG): N/D EVAPORATION RATE(WATER =1): 1.0 VAPOR DENSITY(AIR=1): N/D

: 12.7 SOLUBILITY IN WATER : COMPLETE PH(CONCENTRATE) PHOUSE DILUTION OF 1%

): 10.8

APPEARANCE AND ODOR :CLEAR, COLORLESS LIQUID WITH MILD DETERGENT ODOR.

SECTION VI - FIRE AND EXPLOSION DATA

FLASH POINT(F) (METHOD USED): NONE

FLAMMABLE LIMITS LEL N/A UEL N/A

EXTINGUISHING MEDIA : N/A SPECIAL FIRE FIGHTING: NONE UNUSUAL FIRE HAZARDS : NONE

## NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material. Safety Data Sheets for this product so that your files remain up-to-date.



\*SLAGUBOCAT GIA TERI**T** 

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists

CAR: Carcinogen-Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible-At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive-Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

Estimated.
FBL: Flammable—At temperatures under 100°F,, chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic—The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion—A primary route of exposure through swallowing of liquid or solid (see below).

IRR: Irritant-Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable—Category is not appropriate for this product.

N/D: Not Determined—Insufficient information for a determination for this item.

N/OSH: National Institute for Occupational Safety and Health: I REPORT AND HELLE YELLACIEMET WINDS

OSHA: Occupational Safety and Health Administration: REPORT AND THE TEST PEL: Permissible Exposure Limit-The time weighted average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value-A time-weighted-average exposure value established by the ACCIH for the work period described under PEL, above, the state of the probable lethal dose for a 70 kg man is one ounce or more; that the state of the probable lethal dose for a 70 kg man is one ounce or more; that it is stated that the stated of

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time-weighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without 📶 adverse effects. This does not pertain to sensitive individuals or to aryone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product.: The HMIS CODES refer to the Hazardous Materials Information System developed by the National Raints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry-this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalizedsystèmicior specific-organi toxic effect. To laura visuo Brand Littua Silva Citalli Talli 
As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, out, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death; Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for Your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent.

with label instructions and the Material Safety Data Sheet: Before vising any Zep and Jepper handling practices consistent. with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the domplete label and the Material Safety Data Sheet. Consult your supervisor, of Zep Manufacturing Company, if you have any questions. TOTE THESE LITT GLES STED**DISCLAIMER** SELFCLES FREET FUEL GRAD GRASS REPARASSES

All statements, technical information and recommendations contained herein are based on available scientific tests or data which - ONE we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions; warnings and advisories in the product's label and Material Safety Data Sheet. and a light exiledition. This

SPECIAL SIBE PLONTING: NUMB THE FIRE HATELINE



# MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION

SUPERSEDES: 02/08/87 PRODUCT NUMBER: 0376

PAGE 3 OF 3

**₹EP MANUFACTURING COMPANY** ST IN MAINTENANCE PRODUCTS

: 06/15/88 ZEP TNT DATE

SECTION VII - REACTIVITY DATA

STABILITY

\* STABLE

INCOMPATIBILITY (AVOID) : STRONG ACIDS AND OXIDIZING AGENTS

POLYMERIZATION : WILL NOT OCCUR

HAZARDOUS DECOMPOSITION: CARBON DIOXIDE, CARBON MONOXIDE, & OXIDES OF NITROGEN

SECTION VIII - S P I L L A N D D I S P O S A L P R O C E D U R E S

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: OBSERVE SAFETY PRECAUTIONS IN SECTIONS 4 & 9 DURING CLEAN-UP. ABSORB SPILL ON AN INERT ABSORBENT MATERIAL (eg ZEP-O-ZORB); PICK UP AND PLACE IN A CLEAN D.O.T. SPECIFICATION CONTAINER FOR DISPOSAL. WASH AREA THOROUGHLY WITH A DETERGENT SOLUTION AND THEN RINSE WELL WITH WATER.

WASTE DISPOSAL METHOD:

LIQUIDS CANNOT BE SENT TO LANDFILLS UNLESS SOLIDIFIED. UNUSABLE PRODUCT AND SOME COLLECTED, SPENT USE-DILUTIONS MAY REQUIRE DISPOSAL AS A HAZARDOUS WASTE AT A PERMITTED TREATMENT/STORAGE/DISPOSAL FACILITY. IN MOST STATES HAZARDOUS WASTES IN TOTAL AMOUNTS OF 220 LBS. OR LESS PER MONTH MAY BE DISPOSED OF IN A CHEMICAL OR INDUSTRIAL WASTE LANDFILL. IF COMPANY EFFLUENT IS ULTIMATELY TREATED BY A PUBLICLY OWNED TREATMENT WORKS, NEUTRALIZATION OF SPENT TANK-SOLUTIONS WITH SUB-SEQUENT DISCHARGE TO THE SEWER MAY BE POSSIBLE. CONSULT LOCAL, STATE AND FED-E AGENCIES FOR PROPER DISPOSAL METHOD IN YOUR AREA.

RCRA HAZ. WASTE NOS.: DOO2 (SEE ABOVE)

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN WHEN HANDLING AND STORING: STORE TIGHTLY CLOSED CONTAINER IN A DRY AREA AT TEMPS. BETWEEN 40-120 DEGREES F. STORE AWAY FROM STRONG ACIDS AND OXIDIZING COMPOUNDS. KEEP PRODUCT AWAY FROM SKIN AND EYES. DO NOT BREATHE SPRAY MISTS OR VAPORS. KEEP OUT OF THE REACH OF CHILDREN.

SECTION X - TRANSPORTATION DATA

DOT PROPER SHIPPING NAME

NONE

DOT HAZARD CLASS: N/A

, I.D. NUMBER : N/A DOT LABEL/PLACARD: NONE

ETA TSCA CHEMICAL INVENTORY - ALL INGREDIENTS ARE LISTED

EPA CWA 40CFR PART 117 SUBSTANCE(RQ IN A SINGLE CONTAINER): NONE

## NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material. Safety Data Sheets for this product so that your files remain up-to-date.



-: Tobier enegatic ercso

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and as follows:

ABBREVIATIONS USED IN THE MSDS: may be interpreted as follows:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen-Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite it a source of ignition is present.

CNS: Central Nervous System Depressant. 1108 100 0080 000 0080 000 148 000 148 000 188

COR: Corrosive: Causes irreversible alterations in living tissue (e.g. burns). The ETTERD AND THE DESCRIPTION OF THE AAR THE MEDICAL

EIR: Eye-Irritant Only-Causes reversible reddening and/or inflammation of eye tissues

Est'd: Estimated.
FBL: Flammable—At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.
HTX: Highly Toxic—The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation-A primary route of exposure through breathing of vapors (see below).

IRR: Irritant—Causes reversible effects in living tissues (e.g. Inflammation).

N/A: Not Applicable—Category is not appropriate for this product.

N/D: Not Determined—Insufficient information for a determination for this fem.

NIOSH: National Institute for Occupational Safety and Health. I A LACOPSIG SOARCE MENTAGE CERTIFICATION A

OSHA Occupational Safety and Health Administration of the Research Research Religious Control Religious Research Religious Rel

PEL: Permissible Exposure Limit-The time-weighted-average exposure value-established by QSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN Sensitizer—Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skiri (see below).

TLV: Threshold Limit Value-A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time-weighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized systemic or specific-organ toxic effect. VAPOREL TOIM YARMS SHTÀLAU TOM DU

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of emptied containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product; be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products. may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.





# MATERIAL SAFETY DATA SHEET

## AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 1 OF 3

€ 5

ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS DATE

: 06/15/88 ZEPAK NO. 1455

SUPERSEDES: 03/04/87 PRODUCT NUMBER: 1193

SECTION I - E M E R G E N C Y C O N T A C T S

ZEP MANUFACTURING COMPANY NON-OFFICE HOURS, WEEKENDS, AND HOLIDAYS: AREA CODE 404 435-2973, 996-0899, 252-1587, 351-2952, 445-9226 P.O. BOX 2015

ATLANTA, GEORGIA 30301

LOCAL POISON CONTROL CENTER .............................

TELEPHONE (404)352-1680

TRANSPORTATION EMERGENCY

BETWEEN 8: 00A. M. -5: 00P. M. CHEMTREC: TOLL FREE 1-800-424-7300 ALL CALLS RECORDED (EASTERN TIME ZONE) DISTRICT OF COLUMBIA (202)483-7616 ALL CALLS RECORDED

SECTION II - H A Z A R D O U S I N G R E D I E N T S

TLV EFFECTS DESIGNATIONS (PPM) (SEE REVERSE) PROD.

\*\* SODIUM METASILICATE \*\* (SILICIC ACID(H2-SI-03) DI- N/D COR SODIUM SALT: WATER GLASS: CAS# 6834-92-0;

RTECS# VV9275000; ACGIH/OSHA DUST LIMIT = 2MG/M3 (FOR

POWDERS ONLY)

\*\* SODIUM CARBONATE \*\* SODA ASH; CARBONIC ACID, DI-M/D IRR 20-30 SODIUM SALT: CAS# 497-19-8: RTECS# VZ4050000: OSHA/

ACGIH DUST LIMIT= 15MG/M3

\*\* SODIUM DODECYLBENZENE SULFONATE \*\* LINEAR ALKYL M/D IRR € 5

ARYL SODIUM SULFONATE; CAS# 25155-30-0;

RTECS# DB6825000; DSHA PEL M/D \*\* MONYLPHENOXYPOLY(ETHYLENEOXY)ETHANOL \*\*

M/D EIR POLY(OXY-1,2-ETHANEDIYL), ALPHA-(MONYLPHENYL)-OMEGA-

JROXY: CAS# 9016-45-9; RTECS# MD905000; OSHA PEL-

N/D

SPECIAL NOTE: ADVERSE HEALTH EFFECTS WOULD NOT BE EXPECTED UNDER RECOMMENDED CONDITIONS OF USE SO LONG AS PRESCRIBED SAFETY PRECAUTIONS ARE PRACTICED.

SECTION III - HEALTH HAZARD DATA

ACUTE EFFECTS OF OVEREXPOSURE:

CORROSIVE TO SKIN AND EYES. THE AMOUNT OF TISSUE DAMAGE DEPENDS ON LENGTH OF CONTACT. EYE CONTACT CAN RESULT IN CORNEAL DAMAGE OR BLINDNESS. SKIN CONTACT CAN F DOUCE INFLAMMATION AND BLISTERING. INHALATION OF DUST WILL PRODUCE IRRITATION THE GASTROINTESTINAL OR RESPIRATORY TRACT, CHARACTERIZED BY BURNING, SNEEZING AND COUGHING. SEVERE OVER-EXPOSURE CAN PRODUCE LUNG DAMAGE. CHOKING, UNCONSCIOUSNESS OR DEATH.

## NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

## ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen-Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F., chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive-Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL: Flammable-At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation-A primary route of exposure through breathing of vapors (see below).

IRR: Irritant-Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable—Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value-A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time-weighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

## DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.



## MATERIAL SAFETY DATA SHEET

### AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 2 OF 3

ZEP MANUFACTURING COMPANY

DATE

: 05/15/88 ZEPAK NO. 1455

ST IN MAINTENANCE PRODUCTS

SUPERSEDES: 03/06/87 PRODUCT NUMBER: 1133

SECTION III - H E A L T H H A Z A R D D A T A (CONTINUED)

CHRONIC EFFECTS OF OVEREXPOSURE:

REPEATED EXPOSURE OF THE EYES TO A LOW LEVEL OF DUST CAN PRODUCE EYE IRRITATION. REPEATED SKIN EXPOSURE CAN PRODUCE LOCAL SKIN DESTRUCTION, OR DERMATITIS. RE-PEATED INHALATION OF DUST CAN PRODUCE VARYING DEGREES OF RESPIRATORY IRRITATION OR LUNG DAMAGE.

INGREDIENTS IN THIS PRODUCT MAY AGGRAVATE EXISTING SKIN, EYE, OR RESPIRATORY DISORDERS.

NOME OF THE HAZARDOUS INGREDIENTS ARE LISTED AS CARCINOGENS BY IARC, NTP, & OSHA

EST'D PEL/TLV: NOT ESTABLISHED PRIMARY ROUTES OF ENTRY: N/A

HMIS CODES: HEALTH 3; FLAM. 0; REACT. 0; PERS. PROTECT, B ; CHRONIC HAZ. YES

FIRST AID PROCEDURES:

SKIN : IMMEDIATELY FLUSH CONTAMINATED SKIN WITH PLENTY OF WATER FOR AT LEAST 15

MINUTES, GET MEDICAL ATTENTION IMMEDIATELY.

EYES : IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, OC-

CASIONALLY LIFTING UPPER AND LOWER LIDS. GET MEDICAL ATTENTION AT ONCE.

INMALE: MOVE EXPOSED PERSON TO FRESH AIR AT ONCE. IF BREATHING MAS STOPPED, PER-

FORM ARTIFICIAL RESPIRATION. GET MEDICAL ATTENTION IMMEDIATELY.

MGEST: IF THIS PRODUCT IS SWALLOWED, DO NOT INDUCE VOMITING. IF VICTIM IS

CONSCIOUS GIVE PLENTY OF WATER TO DRINK, GET MEDICAL ATTENTION AT ONCE.

SECTION IV - S P E C I A L P R O T E C T I O N I N F O R M A T I O N

PROTECTIVE CLOTHING : WEAR MEOPRENE, MITRILE, OR MATURAL RUBBER GLOVES, DUST

EXCLUDING CLOTHING AND RUBBER APRON RECOMMENDED.

EYE PROTECTION : VEAR TIGHT-FITTING SAFETY GLASSES WHEN USING OR

HANDLING THIS PRODUCT.

RESPIRATORY PROTECTION: USE NIOSH-APPROVED DUST MASK IF DUST IS PRESENT.

: IF DUST IS DETECTED, VENTILATE WORK AREA BY OPENING VENTILATION

WINDOWS AND USING EXHAUST FANS.

SECTION V - P H Y S I C A L DATA

SPECIFIC GRAVITY : N/A BOILING POINT (F) : N/A

PERCENT VOLATILE BY VOLUME (%) : 0.1 VAPOR PRESSURE(MMHG): N/A VAPOR DENSITY(AIR=1): N/A EVAPORATION RATE(N/A =1): N/A

SOLUBILITY IN WATER : 10 G/100ML PH(COMCENTRATE) : N/A

PHIUSE DILUTION OF 1% SOLUTION ): 12.3-12.7

APPEARANCE AND ODOR : WHITE, GRANULAR POWDER WITH MILD CITRUS ODOR

SECTION VI - FIRE AND EXPLOSION DATA

PEASH POINT(F) (METHOD USED): N/A ( )

FLAMMAGLE LIMITS LEL N/A

EXTINGUISHING MEDIA : N/A SPECIAL FIRE FIGHTING: NOME UNUSUAL FIRE HAZARDS : NOME

## NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.



By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

## ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen-Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F., chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive-Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL: Flammable—At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion—A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation-A primary route of exposure through breathing of vapors (see below).

IRR: Irritant-Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable-Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value-A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time-weighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safety if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.



# MATERIAL SAFETY DATA SHEET

## AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 3 OF 3

ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS DATE

: 06/15/88

ZEPAK NO. 1455

SUPERSEDES: 03/06/87 PRODUCT NUMBER: 1133

SECTION VII - R E A C T I V I T Y D A T A

STABILITY

: STABLE

INCOMPATICILITY(AVOID) : STRONG ACIDS AND OXIDIZING AGENTS

POLYMERIZATION : WILL NOT OCCUR

HAZARDOUS DECOMPOSITION: NONE

SECTION VIII - S P I L L A N D D I S P O S A L P R O C E D U R E S

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: OBSERVE SAFETY PRECAUTIONS IN SECTIONS 4 & 9 DURING CLEAN-UP. SWEEP POWDER OR ABSORE SPILLED TANK-SOLUTION ON INERT ABSORBENT MATERIAL (EG ZEP-O-ZORB) AND PLACE IN A CLEAN D.O.T. SPECIFICATION CONTAINER FOR DISPOSAL. WASH AREA THOROUGHLY WITH A DETERGENT SOLUTION AND RINSE WELL WITH WATER.

### WASTE DISPOSAL METHOD:

LIQUIDS CANNOT RE SENT TO LANDFILLS UNLESS SOLIDIFIED. NEVER DISPOSE OF THIS PRODUCT WITH GENERAL WASTE. UNUSABLE PRODUCT AND SPENT TANK-SOLUTIONS MAY REQUIRE DISPOSAL AS A HAZARDOUS WASTE AT A PERMITTED TREATMENT/STORAGE/DISPOSAL FACILITY. IN MOST STATES, MAZARDOUS WASTES IN TOTAL AMOUNTS OF 220 LBS. OR LESS PER MONTH MAY BE DISPOSED OF IN A CHEMICAL OR INDUSTRIAL WASTE LANDFILL. COMPANY EFFLUENT IS ULTIMATELY TREATED BY A PUBLICLY OWNED TREATMENT WORKS, NFUTRALIZATION OF SPENT TANK-SOLUTIONS WITH SUCSEQUENT DISCHARGE TO SEWER MAY BE SIBLE. CONSULT LOCAL, STATE, AND FEDERAL AGENCIES FOR PROPER DISPOSAL METHOD IN YOUR AREA.

RCRA HAZ. WASTE NOS.: DOOR (SOLUTIONS ONLY)

SECTION IX - SPECIAL PRECAUTIONS

1987 - 19

PRECAUTIONS TO BE TAKEN WHEN HANDLING AND STORING:

STORE TIGHTLY CLOSED CONTAINER IN A DRY AREA AT TEMPS. BETWEEN 40-120 DEGREES F. KEEP PRODUCT AWAY FROM SKIN AND EYES.

CLOTHING OR SHOES WHICH BECOME CONTAMINATED WITH SUBSTANCE SHOULD BE REMOVED PROMPTLY AND NOT REWORN UNTIL THOROUGHLY CLEANED.

KEEP OUT OF THE REACH OF CHILDREN.

SECTION X - TRANSPORTATION DATA

DOT PROPER SHIPPING NAME

MONE

DOT HAZARD CLASS: N/A

T I.D. NUMBER : N/A

DOT LABEL/FLACARD: NONE

E-A TSCA CHEMICAL INVENTORY - ALL INGREDIENTS ARE LISTED

EPA CWA 400FR PART 117 SUBSTANCE(RG IN A SINGLE CONTAINER): SODIUM DODECYL-

SENZENE SULFONATE - 1000#

## NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.



By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

## ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen-Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F., chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive-Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL: Flammable—At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation—A primary route of exposure through breathing of vapors (see below).

IRR: Irritant-Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable-Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for this item,

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value-A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time-weighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.



ZEP MANUFACTURING COMPANY P.O. BOX 2015 ATLANTA, GEORGIA 30301

## MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION

**ISSUE DATE: 06/15/88 SUPERSEDES: 03/06/87** 

**ZEPAK NO. 1466** PRODUCT NO.: 1133

Laundry Compound

SECTION 1 - EMERGENCY CONTACTS

TELEPHONE:

(404) 352-1680

BETWEEN 8:00 AM - 5:00 PM (EST)

MEDICAL EMERGENCY:

(404) 435-2973

NON-OFFICE HOURS, WEEKENDS AND HOLIDAYS. PLEASE CALL YOUR

(404) 351-2952 (404) 432-2873

LOCAL POISON CONTROL

TRANSPORTATION EMERGENCY:

(404) 922-0923 CHEMTREC:

TOLL-FREE - ALL CALLS RECORDED

1-800-424-9300 DISTRICT OF COLUMBIA:

(202) 483-7616

ALL CALLS RECORDED

SECTION II - HAZARDOUS INGREDIENTS **EFFECTS** % IN (PPM) (SEE REVERSE) PROD. DESIGNATIONS \* SODIUM METASILICATE \* (silicic acid(H2-Si-O3) disodium salt; water glass; CAS # 6834-92-0; RTECS # VV9275000; OSHA/ACGIH DUST LIMIT-2 MG/M3 (FOR POWDERS ONLY) N/D COB 30-40 SODIUM CARBONATE \* soda ash, carbonic acid, disodium salt; CAS # 497-19-8; RTECS # VZ4050000; OSHA/ ACGIH N/D IRR 20-30 DUST LIMIT = 15mg/m3 SODIUM DODECYLBENZENE SULFONATE \* linear alkyl aryl sodium sulfonate; CAS# 25155-30-0; RTECS# N/D IRR < 5 DB6825000; OSHA PEL N/D NONYLPHENOXYPOLY(ETHYLENEOXY)ETHANOL poly(oxy-1,2-ethanediyl), alpha-(nonylphenyl)-omega-hydroxy; N/D ΕIR < 5

SECTION III - HEALTH HAZARD DATA

Special Note: MSOS data pertains to the product as dispensed from the container. Adverse health effects would not be expected under recommended conditions of use (diluted) so long as prescribed safety precautions are practiced.

Acute Effects of Overexposure:

CAS # 9016-45-9; RTECS # MD905000; OSHA PEL-N/D

Corrosive to skin and eyes. The amount of tissue damage depends on length of contact. Eye contact can result in corneal damage or blindness. Skin contact can produce ammation and blistering. Inhalation of dust will produce irritation to gestrointestinal or respiratory tract, characterized by burning, annexing and coughing. Severe papers or death.

enronic Effects of Overexposure:

Repeated exposure of the eyes to a low level of dust can produce eye irritation. Repeated skin exposure can produce local skin destruction or dermalitis. Repeated inhalation of dust can produce varying degrees of respiratory irritation or lung damage. Ingredients in this product may aggravate existing skin, eye, or respiratory disorders. None of the hazardous ingredients are listed as carcinogens by IARC, NTP, & OSHA

Est'd PEL/TLV: Not established

Primary Routes of Entry: N/A

HMIS Codes: HEALTH 3; FLAM. 0; REACT, 0; PERS. PROTECT, B; CHRONIC HAZ, YES

FIRST AID PROCEDURES: Skin:

Immediately flush contaminated skin with plenty of water for at least 15 minutes. Get medical attention immediately.

Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting upper and lower lids. Get medical attention at once. Inhale: Move exposed person to fresh air at once. If breathing has stopped, perform artificial respiration. Get medical attention immediately.

Ingest: If this product is swallowed, do not induce vomiting. If victim is conscious give plenty of water to drink. Get medical attention at once

SECTION IV - SPECIAL PROTECTION INFORMATION Wear neoprene, nitrile, or natural rubber gloves. Dust excluding clothing and rubber apron recommended.

Protective Clothing: Eye Protection:

Respiratory Protection: Ventilation:

Wear tight-fitting salety glasses when using or handling this product. Use NIOSH-approved dust mask if dust is present.

If dust is detected, ventilate work area by opening windows and using exhaust fans.

SECTION V - PHYSICAL DATA

Boiling Point (°F) N/A Percent Volatile by Volume (%): 0.1

10 G/100ML

Specific Gravity: Vapor Density (alr = 1): N/A Solubility in Water: 10 G/100ML pH (concentrate): Appearance and Odor: WHITE, GRANULAR POWDER WITH MILD CITRUS ODOR N/A

Vapor Pressure (mmHg): Evaporation Rate (N/A = 1): pH (use dilution of 1% SOLUTION ): N/A 12.3-12.7

SECTION VI - FIRE AND EXPLOSION DATA

Flash Point (°F) (method used):

Flammable Limits:

Extinguishing Media: Special Fire Fighting: Unusual Fire Hazards: N/A ( ) LEL N/A UEL N/A N/A NONE

SECTION VII - REACTIVITY DATA

Stability:

Polymerization:

Incompatibility (avoid):

Strong acids and exidizing agents Will not occur.

Hazardous Decomposition:

SECTION VIII - SPILL AND DISPOSAL PROCEDURES

to be Taken in Case Material is Released or Spiffed:

Observe safety precautions in sections 4 & 9 during clean-up. Sweep powder or absorb spilled tank-solution on inert absorbent material (e.g. Zep-O-Zorb) and place in a clean D.O.T. specification container for disposal. Wash area thoroughly with a detergent solution and rinse well with water.

Waste Disposal Method: Liquids cannot be sent to landfills unless solidified. Never dispose of this product with general waste. Unusable product and spent tank-solutions may require disposal as a hazardous waste at a permitted treatment/storage/disposal facility. In most states, hazardous wastes in total amounts of 220 lbs. Or less per month may be disposed of in a chemical or industrial waste landfill. If company effluent is ultimately treated by a publicly owned treatment works, neutralization of spent tank-solutions with subsequent discharge to sewer may be possible. Consult local, state, and federal agencies for proper disposal method in your area.

RCRA Hazardous Waste Numbers: D002 (SOLUTIONS ONLY)

### SECTION IX - SPECIAL PRECAUTIONS

Precautions to be Taken When Handling and Storing:

Store tightly closed container in a dry area at temps, between 40-120 degrees F. Keep product away from skin and eyes. Clothing or shoes which become contaminated with substance should be removed promptly and not reborn until thoroughly cleaned. Keep out of the reach of children

SECTION X - TRANSPORTATION DATA

DOT Proper Shipping Name; NONE

DOT Hazard Class: N/A DOT I.D. Number: N/A

EPA TSCA Chemical Inventory: ALL INGREDIENTS ARE LISTED

EPA CWA 40CFR Part 117 substance (RQ in a single container): : SODIUM DODECYLBENZENE SULFONATE, 1000 #

## NOTICE

DOT Label/Placard: NONE

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Co. is pleased to be of service to you by Zep Manufacturing Co. is pleased to be of service to you by supplying this Moternal Safety Data Sheet for your lifes. Zep Manufacturing is concerned for your health and safety. Zep products can be used safely with proper protective equip-ment and proper handling practices consistent with label instructions and the MSDS. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Data Sheet.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (figure and/or vapor) and can be dangerous. OO NOT pressurize, cut, wild braze, solder, drill, grind or expose such containers to hait, flame, or other sources of (guition; they may explode or develop harmful vapors and possibly cause injury or death Clean empty containers by triple rinsing with water or an appropriate solvent. Empty containers m: 3 sent to a drum reconditioner before reuse.

## RMS AND ABBREVIATIONS USED IN THE MSDS: BY SECTION ALPHABETICALLY:

### SECTION II: HAZARDOUS INGREDIENTS

CAR: Carcinogen - A chemical listed by the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or OSHA as a definite or possible human

cancer causing agent.

CAS #: Chemical Abstract Services Registry Number - A universally accepted numbering system for chemical substances.

Combustible - At temperatures between 100°F and CDL Commission An imperatures between 100-7 and 200°F chemical gives off enough vapor to ignite it a source of ignition is present as tested with a closed cup tester. CNS. Contral Nervous System depressant reduces the activities.

ity of the brain and spinal cord. COR: Corrosive - Causes irreversible alterations in fiving tissue (e.g. burns).

DESIGNATIONS: Chemical and common names of hazardous

inaredients.

EIR: Eye frutant Only - Causes reversible reddening and/or

EXPOSURE UNITS: The time weighted average (TWA) air-borne concentration at which most workers can be exposed without any expected adverse effects. Primary sources include ACGIH TLV's, and OSHA PEL's (TWA, STEL and ceiling

ACGIH: American Conference of Governmental Industrial Hygienists. *CEIUING:* The concentration that should not be exceeded

in the workplace during any part of the working exposure. OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit: A set of time weighted average exposure values, established by OSHA, for a normal 8-hour day and a 40-hour work week.

million - unit of measure for exposure

(\$) SKIN: Skin contact with substance can contribute to overall exposure.

STEL: Short Term Exposure Limit- Maximum concentration

for a continuous 15-minute exposure period.

TLV: Threshold Limit Value - A set of time weighted aver-

age exposure limits, established by the ACGIH, for a normal 8-hour day and a 40-hour work week. Flammable - At temperatures under 100°F, chemical gives oll enough vapor to ignite il a source of ignition is present as lested with a closed cup tester.
HAZARDOUS INGREDIENTS: Chemical substances deter-

mined to be potential health or physical hazards by the criteria established in the OSHA Hazard Communication Standard - 29 CFR 1910-1200

HTX: Highly toxic + the probable tethal dose for 70 kg (150 77A. Figury toxic - the probable tetral dose for 70 kg (150 lb.) man and may be approximated as less than 6 teaspoons (2 tablespoons). IRR: Irritant - Causes reversible affects in living tissues (e.g. mftammation) - primarily skin and oyes.
N/A. Not Applicable - Category is not appropriate for this product.

product. \( \text{N/O}: Not Determined - Insufficient information for a deter-

### Registry of Toxic Effects of Chemical Substances on unreviewed listing of published toxicology data on chemical substances.

SARA: Superfund Amendments and Reauthorization Act-Section 313 designates chemicals for possible reporting for the Toxics Release Inventory. SEN: Sensitizer - Causes allergic reaction after repeated

exposure.

Toxic - The probable lethal dose for a 70 kg (150 lb.) man is one ounce (2 tablespoons) or more.

### SECTION III: HEALTH HAZARD DATA

SECTION III: HEALTH HAZARD DATA
ACUTE EFFECT: An adverse effect on the human body from
a single exposure with symptoms developing almost immediately after exposure or within a relatively short time.
CHRONIC EFFECT: Adverse effects that are most likely to
accur from repealed exposure over a long period of time.
ESTO PEUTLY: This estimated, time-weighted average, exposure limit, developed by using a formula provided by the
ACGIH, pertains to airborne concentrations from the product as a whole. This value should sorve as guide for providing safe workplace conditions to nearly all workers.
HMIS CODES: Hazardous Material Identification System - a
rating system developed by the National Plant and Coating
Association for estimating the hazard potential of a chemi-

rating system developed by the National Paint and Coating Association for estimating the hazard potential of a chemi-cal under normal workplace conditions. These risk estimates are indicated by a numerical rating given in each of three hazard areas (Health/Flammability/Reactivity) ranging from a low of zero to a high of 4. A chronic hazard is indicted with a yes. Consult HMIŞ training guides for Personal Pro-lection letter codes which indicate necessary protective explanation.

PRIMARY ROUTE OF ENTRY: The way one or more haz-ardous ingredients may enter the body and cause a general-

izad-systemic or specific-organ toxic ellect.

ING: Ingestion - A primary route of exposure through swallowing of material.

INH: Inhalation - A primary route of exposure through

breathing of vapors. SKIN: A primary route of exposure through contact with

### SECTION IV: SPECIAL PROTECTION INFORMATION

Where respiratory protection is recommended, use only MSHA and NIOSH approved respirators and dust masks MSHA: Mine Safety and Health Administration NIOSH: National institute for Occupational Salety and

### SECTION V: PHYSICAL DATA

EVAPORATION RATE: it refers to the rate of change from the EVAPORATION MATE: it refers to the rate of change from the liquid state to the vapor stato at ambient temperature and pressure in comparison to a given substance (e.g. water). ptf: A value representing the activity or alkalimity of an aqueous solution (Acidic pH = 1; Neutral pH = 7; Alkalimi pH = 14).

PERCENT VOLATILE: The percentage of the product (figual or solid) that will evaporate at 212°F and ambient pressure. SOLUBILITY IN WATER: A description of the ability of the

product to dissolve in water.

### SECTION VII: REACTIVITY DATA

HAZARDOUS DECOMPOSITION: Breakdown products expected to be produced upon product decomposition or fire. INCOMPATIBILITY: Material contact and conditions to avoid to prevent hazardous reactions.

POLYMERIZATION: Indicates the tendency of the product's molecules to combine in a chemical reaction releasing ex-

pressure and heat. STABILITY: Indicates the susceptibility of the product to spontaneously and dangerously decompose.

## SECTION VIII: SPILL AND DISPOSAL PROCEDURES

ACAA WASTE NOS: RCRA (Resource Conservation and Re-covery Act) waste codes (40 CFR 261) applicable to the disposal of spilled or unusable product from the original container.

### SECTION X: TRANSPORTATION DATA CWA: Clean Water Act

AQ: Reportable Quantity - The amount of the specific ingredent that, when spligd to the ground and can enter a storm sewer or natural watershed, must be reported to the National Response Center, and other regulatory agencies. TSCA: Toxic Substances Control Act - a lederal law requiring all commercial chemical substances to appear on an inventory maintained by the EPA.

## DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaran-teed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from The failure to follow instructions, warnings, and advisories in the product's label and Material Safety Data Sheet.

(Notice Revised 8/91)

# DU PONT

## MATERIAL SAFETY DATA SHEET

## **IDENTIFICATION**

NAME

TI-PURE\* Titanium Dioxide

Pigment

GRADE

R-100; R-101; R-900; R-901; R-902; R-931; R-960; RPD (Rutile

Pigment Dry)

**SYNONYMS** 

Titania; TiO2; Rutile

CAS NAME

Titanium Oxide

I.D. NOS./CODES

NIOSH Registry No.: XR2275000

MANUFACTURER/DISTRIBUTOR

E. I. du Pont de Nemours & Co. (Inc.)

ADDRESS

Wilmington, DE 19898

CHEMICAL FAMILY

Inorganic Oxide

**FORMULA** 

TiO<sub>2</sub>

CAS REGISTRY NO.

13463-67-7

TSCA INVENTORY STATUS

Reported/Included

PRODUCT INFORMATION PHONE

(800) 441-9442

MEDICAL EMERGENCY PHONE

(\$00) 441-3637

TRANSPORTATION EMERGENCY PHONE

CHEMTREC (800) 424-9300

## PHYSICAL DATA

BOILING POINT, 760 mmHg

Not applicable

SPECIFIC GRAVITY

3.8-4.3

VAPOR DENSITY

Not volatile

pH INFORMATION

4-10 (water extract)

FORM

Solid

COLOR

White

MELTING POINT

Not applicable

VAPOR PRESSURE

Not volatile

SOLUBILITY IN WATER

Insoluble

EVAPORATION RATE (BUTYL ACETATE = 1)

Not volatile

APPEARANCE

Powder

ODOR

None

\*Reg. U.S. Pat. & Tm. Off., Du Pont Company. Ti-Pure (R) Titanium Dioxide is made only by Du Pont.

H-01316

Date: 6/88

The data in this Material Salety Data Sheet related only to the specific material designated nerein and does not relate to use in combination with any other material or in any process.

P.186

W 940

## **HAZARDOUS COMPONENTS**

MATERIAL(S)	CAS No.	APPROXIMATE %
Titanium Dioxide	13463-67-7	80 - 98
Aluminum Hydroxide	21645-51-2	0 - 9
Amorphous Silica	7 <b>6</b> 31-86-9	0 - 10

## HAZARDOUS REACTIVITY

INSTABILITY
Stable

INCOMPATIBILITY
None known.

DECOMPOSITION
Will not occur.

POLYMERIZATION
Will not occur.

## FIRE AND EXPLOSION DATA

FLASH POINT

Will not burn.

FLAMMABLE LIMITS IN AIR, % BY VOL. LOWER Not applicable. UPPER Not applicable.

AUTOIGNITION TEMPERATURE Not applicable.

AUTODECOMPOSITION TEMPERATURE

FIRE AND EXPLOSION HAZARDS
None

Not applicable.

EXTINGUISHING MEDIA

Any media as appropriate for combustibles in area.

SPECIAL FIRE FIGHTING INSTRUCTIONS
None

H-01316

Date: 6/88

P-226

2

 $\cap$ 

EBOW ICI GLIDDEN

az:e ze. a: Tnr

## PROTECTION INFORMATION

## GENERALLY APPLICABLE CONTROL MEASURES

Good general ventilation should be provided to keep dust concentrations below the exposure limits.

## PERSONAL PROTECTIVE EQUIPMENT

If exposure limits are exceeded, NIOSH approved air purifying respirators equipped with particulate filters (properly fitted dust masks) should be used. As a matter of good industrial hygienic practice, eye protection (minimum: safety spectacles with side shields) should be worn when handling titanium dioxide.

## DISPOSAL INFORMATION

## AQUATIC TOXICITY

The 96-hr LC50 in sheephead minnow is <370 ppm, >240 ppm. The 96-hr LC50 in opossum shrimp is <400 ppm, >300 ppm.

## SPILL, LEAK OR RELEASE

Shovel into covered container for disposal. Flush residue to wastewater treatment system.

## WASTE DISPOSAL

Comply with Federal, State, and local regulations. If approved, remove to land disposal area.

## SHIPPING INFORMATION

Not regulated as a hazardous material by DOT or IMO.

## OTHER INFORMATION

## SHIPPING CONTAINERS

Tank cars, tank trucks, bags

## STORAGE CONDITIONS

Protect containers from damage.

H-01316

Date: 6/88

 $\mathcal{S}$  a:se ekow ici GLIDDEN

800.3589

## HEALTH HAZARD INFORMATION (con't)

## CARCINOGENICITY

None of the components of this product is listed as a carcinogen by IARC, NTP, OSHA, or ACGIH. For information from Du Pont, see the Health Hazard Information section.

## EXPOSURE LIMITS [PEL (OSHA), TLV (ACGIH), AEL (DU PONT), ETC.]

The exposure limits for aluminum hydroxide, amorphous silica, and titanium dioxide arc:

## Aluminum Hydroxide

ACGIH TLV<sup>(R)</sup>-TWA: None established. OSHA 8-hour TWA: None established.

## Amorphous Silica

ACGIH TLV(R)-TWA: 10 mg/m3 (total dust)

OSHA 8-hour TWA: 80 mg per m3

% SiO<sub>2</sub>

Du Pont AEL: 3 mg/m<sup>3</sup> (respirable dust), 6 mg/m<sup>3</sup> (total dust)

## Titanium Dioxide

ACGIH TLV(R)-TWA: 10 mg/m3 (total dust)

OSHA 8-hour TWA: 15 mg/m3

Du Pont AEL: 5 mg/m<sup>3</sup> (respirable dust), 10 mg/m<sup>3</sup> (total dust)

## SAFETY PRECAUTIONS

Avoid breathing dust. Use dust filter respirator if exposure limits are exceeded (see Personal Protective Equipment).

## FIRST AID

If large amounts are inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

In case of eye contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

In case of skin contact, the compound is not likely to be hazardous but cleansing the skin after use is advisable.

If swallowed, no specific intervention is indicated as the compound is not likely to be hazardous by ingestion. However, consult a physician if necessary.

H-01316 Date: 6/88

PAGE, 809

## HEALTH HAZARD INFORMATION

PRINCIPAL HEALTH HAZARDS (Including Significant Routes, Effects, Symptoms of Overexposure, and Medical Conditions Aggravated by Exposure)

Inhalation 4-hour ALC: >6,820 mg/m<sup>3</sup> in rats (~96% TiO<sub>2</sub>) Skin LD50: >10,000 mg/m<sup>3</sup> in rabbits Oral LD50: >24,000 mg/kg in rats

Some (but not all) grades covered by this MSDS contain aluminum hydroxide or aluminum hydroxide and amorphous silica.

The product contains titanium dioxide which is not a significant skin irritant and may contain amorphous silica which is a mild skin irritant and a mild eye irritant in animals. In short term inhalation studies of titanium dioxide mixtures containing 6% aluminum hydroxide and 8% silicon dioxide, a slight fibrogenic response occurred in animals exposed to 1000 mg/m<sup>3</sup> respirable dust. A typical dust-cell reaction but no fibrogenic response was noted in animals similarly exposed to titanium dioxide, or titanium dioxide mixtures containing from 1% to 3% aluminum hydroxide, and 2.7% to 6% silicon dioxide. Tests in bacterial or mammalian cell cultures with aluminum hydroxide, titanium dioxide, and amorphous silica demonstrate no mutagenic activity.

In lifetime inhalation studies of respirable titanium dioxide at levels up to 250 mg/kg, no compound related clinical signs of toxicity were seen in the exposed animals. Slight pulmonary fibrosis was seen at 50 and 250 mg/m³ respirable titanium dioxide but not at 10 mg/m³. There was no evidence of cancer in animals exposed to 10 or 50 mg/m³ respirable titanium dioxide. Microscopic lung tumors were seen in 25 percent of the rats exposed to 250 mg/m³ respirable titanium dioxide. The lung tumors observed in the rats were different from common human lung cancers, relative to anatomic type and location, and occurred only at dust levels which overwhelmed the animals' lung clearance mechanism and, therefore, are of questionable biological relevance for man. In lifetime animal feeding tests at levels up to 50,000 ppm, titanium dioxide showed no evidence of cancer or other significant adverse effects in either rats or mice. Tests of amorphous silica in animals demonstrate no carcinogenic activity.

Human health effects of overexposure to amorphous silica by skin or eye contact may include eye irritation with discomfort, tearing, or blurring of vision; or skin irritation with discomfort or rash. Human health effects of overexposure by inhalation to titanium dioxide may include mild and temporary upper respiratory irritation with cough and shortness of breath. Overexposure by inhalation to amorphous silica may cause temporary lung irritation effects with cough, discomfort, difficulty breathing, or shortness of breath. Individuals with preexisting diseases of the lungs may have increased susceptibility to the toxicity of excessive exposures to amorphous silica.

Results of a Du Pont epidemiology study showed that employees who had been exposed to titanium dioxide pigments were at no greater risk of developing lung cancer than were employees who had not been exposed to titanium dioxide pigments. No pulmonary fibrosis was found in any of the employees and no associations were observed between titanium dioxide pigment exposure and chronic respiratory disease or lung abnormalities. Based on the results of this study, Du Pont concludes that titanium dioxide pigment will not cause lung cancer or chronic respiratory disease in humans at concentrations experienced in the workplace.

H-01316 I

Date: 6/88

P.5 176

3

## ADDITIONAL INFORMATION AND REFERENCES

## NPCA - HMIS RATINGS

Health 0
Flammability 0
Reactivity 0
Personal Protection -

Personal Protection rating to be supplied by user depending on use conditions.

## SARA/Title III Hazard Categories

## Categories:

Chronic Health - No
Acute Health - No
Fire Hazard - No
Pressure Hazard - No
Reactivity - No

Tier I Reporting: These quantities do not include "X" lbs. of TiO2, which does not meet

the definition of any hazard category.

Tier II Reporting: TiO2 is classified as a nuisance dust and does not meet the definition

of any hazard category.

For further information, see Du Pont TI-PURE Data Sheets.

DATE OF LATEST REVISION/REVIEW: 3/88

PERSON RESPONSIBLE FOR MSDS:

J. C. WATTS Du Pont Co.

C&P Dept., Chestnut Run-709

Wilmington, DE 19898

(302) 999-4946

118966B

H-01316

Date: 6/88

OUPOND 35 STEP

FROM ICI GLIDDEN



## PROCTER & GAMBLE

Foodservice & Lodging Products Drawn Winton Hill Technical Center 6071 Center Hill Road Cincinnati, Ohio 45224

# MATERIAL SAFETY DATA SHEET

Issue Date: 7/1/88

SECTION I

Emergency Telephone Number: Procter & Gamble Operator 1-513-562-1100

Identity: Institutional Pack Comet Cleanser with Chlorinol (Brand Codes: 08195, 08181)

Ingredients/Chemical Name: Sodium dichloro-s-triazinetrione dihydrate, tetrasodium pyrophosphate, sodium carbonate, sodium alkyl benzene sulfonates, colorant and perfume.

Other: This product is an EPA registered pesticide. (EPA Reg. No. 3573-51)

SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION Hazardous Ingredients as defined by OSHA, 29 CFR 1910. 1200. ACGIH OSHA Other Limits Common Cas Chemical Name Name No. 7722-88-5 TLV 5mg/m<sup>3</sup> PEL Recommended complex sodium N.K. tetrasodium N.A. phosphate pyrophosphate

This mixture, when tested as a whole, is considered an eye irritant within the meaning of the OSHA Hazard Communication Standard.

SECTION III - PHY	SICAL/CHEMICAL CHARACTERISTICS
ť	1
Boiling Point (*F): N.A.	Specific Gravity (H2O=1): 1 (Bulk density)
Vapor Pressure (mm Hg): N.A.	Specific Gravity (H <sub>2</sub> O=1): 1 (Bulk density) Percent Volatile by Volume (%): 1
Vapor Density (Air=1): N.A.	Evaporation Rate (n8uOAc=I): N.A.
	Appearance and Odor: Green Powder, Cedar
Solubility in Water: Moderate	pine odor

SECTION IV - FLAMMABILITY AND REACTIVITY				
Flash Point (Met	hod Used): N.A.	Explosive Limits:	LEL: N.A. UEL: N.A.	
Extinguishing Media: Use CO <sub>2</sub> water or dry chemical				
	hting Procedures: Non			
Unusual Fire Hazards: None Known				
	Unstable:	Conditions to Avoid:	None Known	
Stability				
	Stable: X			
Incompatability (Materials to avoid): Ammonia or acid products.				
Hazardous Decomp	osition/By Products:	Chlorine gas, Chloramin	es in small amounts.	
Hazardous	May Occur:	Conditions to Avoid:	None Known	
Polymerization		.[		
1	HIII Not Occur: X			

0951z-9

## SECTION V - HEALTH AND SAFETY DATA

Route(s) of Entry: Ingestion, eye contact, skin contact, inhalation.

Health Hazards (Acute and Chronic): Mild skin, eye and mucous membrane irritant. Signs and Symptoms of Exposure: Prolonged skin contact or instillation into the eye may result in superficial transient effects similar to those produced by other household detergents. Ingestion may result in mild gastrointestinal irritation with nausea, vomiting and diarrhea.

Medical Conditions Generally Aggravated by Exposure: Use on irritated or extremely dry skin may aggravate the existing condition.

Emergency and First Aid Procedures: Ingestion: dilute with water or milk and treat symptomatically. Inhalation: Leave dusty area. Eye Contact: Flush thoroughly with water for 15 minutes. Skin Irritation: Discontinue use, wash with soap and water. Other: Product Label States: Keep out of reach of children. May cause eye irritation. In case of contact, flush thoroughly with water. If irritation persists,

see a physician. In case of ingestion, drink a glass of water.

SECTION VI - PRECAUTIONS FOR SAFE HANDLING AND USE

Precautions to be Taken in Handling and Storing: Avoid moisture to prevent loss of bleaching/germicidal action and to prevent caking.

Other Precautions: None required.

Steps to be Taken in Case Material is Released or Spilled: Sweep up and dispose.

Haste Disposal Method: Product contains biodegradable surfactants. If permitted, flush down sewer drain with large excess of water or dispose of at landfill.

Disposal is to be performed in compliance with all regulations.

	SECTION VII - SPECIAL PROTECT	ION INFORMATION	
Respiratory Pr handling or du	otection (Specify Type): None requisty conditions, use NIOSH approved r	red for normal u	se. For bulk ction for dust.
Ventilation	Local Exhaust: None required for Mechanical (General): Acceptable	normal use	Special: None Other: None
Eve Protection	: None required with normal usage.		ves: None required
Other Protecti	ve Equipment: None required with no	rmal usage.	

\*N.A. - Not Applicable

\*N.K. - Not Known

The submission of this MSDS may be required by law, but this is not an assertion that the substance is hazardous when used in accordance with proper safety practices and normal handling procedures. Data supplied is for use only in connection with occupational safety and health.

0951z-10

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

SSS Dust Mop Tre	NOTE: Blank spaces are not permitted. If any item is not applicable, o no information is available, the space must be marked to indicate that.					
EC. WI						
enufactured for:		Emergency Telepho		ght: 303-722-808 1		
Triple S		Day: 303-355-1606 or 303-680-8739 Telephone Number for Information 617-273-2020				
141 Middlesex Turnpike Burlington, MA 01803	Date Prepared	September	29, 1986			
Duffington, ma or boo		Signature of Prepare	er (Optional)	<u> </u>	· · ·	
CTIONII - Hazardous Ingredie	nts/Identity Info	rmation				
az ardous Components (Specific Chemic	al Identity; Common N	ame(s)) OSHA PEL	ACGIH TLY	Other Limits Recommended	% (Optional)	
din eral Oil CAS # 8008-2	0-6		N/D		33.2%	
ydrocarbon Solvent CAS# 64741-	96-4		500 PPM		66.6%	
Solvent is a complex mixture of par	allin, is oparallin, nap	hthene and aromalic h	nydrocarbons			
in the C12 to C15 Carbon number	range.)	· · · · · · · · · · · · · · · · · · ·			· · · · · · · · · · · · · · · · · · ·	
				·		
				<del></del>	· · · · · · · · · · · · · · · · · · ·	
· · · · · · · · · · · · · · · · · · ·	<del> </del>					
			<del></del>			
ECTION III - Physical/Chemica	Characteristics		0 1)			
ioiling Point	500°F	Specific Gravity (H	20=1)		.8417	
apor Pressure (mm Hg.)	<1	Melting Point			NID	
(apor Density (AIR = 1)	N/D	Evaporation Rate (Butyl Acetate = 1)			N/D	
Solubility in Water Nil						
Appearance and Odor Pale amber,	no objectionable od	or.				
SECTIONIV — Fire and Explosio	n Hazard Data					
-lash Foint (Method Used) 138,2% al 760mmHG(Tap Closed	Cup ASTM DS6-79	Flammable Limits	N/D	LEL NID	NID NID	
ortinguishing Media CO2, Foem, Dry	Chemical, Waternot	recommended				
pecial Fire Fighting Procedures Suitab	le protective equipm	ent for combating hyd	irocarb on fires			
Inusual Fire and Explosion Hazards	ssible dense smoke	This material will not e	xplode aponts	an e o usiv		
r v.	STORE GERBE SHOKE.	THE THE CHANNEL WITH	Spinor operito		· · · · · · · · · · · · · · · · · · ·	

e information and recommendations in this data sheet are believed to be correct and reliable. However, the data is offered consideration and verification by the user and Triple S offers no guarantee, warranty or representation as to the accuracy injecteness of the data.

Appendix33-000544

# - ASH GROVE CEMENT COMPANY

13939 N. Rivergate Blvd. • Portland, Oregon 97203 503-286-1677 • FAX: 289-2272

**VENDOR: 00597240** 

ATTN BOB MUNGER
BOB NAGEL DISTRIBUTING CO.
2101 S.E. 7TH AVE
PORTLAND. OR 97214

PURCHASE ORDER NO.

89510337

#### **INSTRUCTIONS**

- Render all invoices in duplicate to plant address.
   Show purchase and a number on invoice abication.
- Show purchase order number on invoice, shipping notice and container label.
- Do not make substitutions without consulting us.
- The right is reserved to cancel this order if delivery is not made as promised.

	0001001
Date Issued	10/12/95
Date Required	
4.	10/26/95
Terms	
	NET 30
Via	
	VENDORS TRUCK
Freight Terms	
	FOB: DESTINATIONGATE

This order is  $\square$  a confirmation  $\square$  not a confirmation

Item No.	Quantity	Unit of Meas,	Description	Store No.	Machine No.	Account No.	Price
01	1	вох	HEAVY DUTY HAND CLEANSER. SANI-TUFF (CASE = 2 BOX)(8 litre box) NSS	· ·		00-00-0420-0008	30.47
			Supplier #: 204 222 ST	OEM: 91723			
02	$\sqrt{24}$		COMET CLEANSER, INSTITUTIONAL PACK, NSS (CS=24 EA (21oz))	29-01-100		00-00-0420-0008	1.08
. 1	·		Supplier #: 246 559 PG	OEM: 153030	-		
673s	90		SHOP MASTER WIPERS (CS=15). JAMES RIVER	29-02-020		00-00-0420-0008	3.37
			Supplier #: 604 SCT 5320 CASE = 15 BOX AT 125 MEDIUM DUTY WIPER 9-3/4" X 12-3/4" ZELLERBACH # 424674	OEM: 5320 S PER BOX			
04	30		TRIGGER SPRAYER ONLY, FOR 1 QRT BTL; NSS Supplier #: 316 106 BND	29-02-351 OEM: 341834		00-00-0420-0008	1.50
0.5	V 6		DUST MOP TREATMENT - VELVA SHEEN, Supplier #: 246 912 SSS	29-01-150 OEM: 246-91	<b>2-35</b> \$	00-00-0420-0008	11.30
96	2		26 QRT RUBBERMAID MOP BUCKET W/ WHEELS Supplier #: 6113	99-99-999		08-72-6200-0000	54.86
			** ORIGINAL ORDER **			-	
				Lappone		or provide to be water	

(h. Ovadoob13700 10/18/95)

APPROVAL

ORDER MUST BE SIGNED TO BE VAUD

446

bound & Maday



# North American Refractories Co.

WESTERN DIVISION



BRAND: LO-CAST 50 HS

APPLICATION: VIBRATABLE CASTABLE

DESCRIPTION: Low iron 3000°F abrasion resistant high strength

vibratable castable mix.

SERVICE DATA: (ASTM C113, C133, C20)

(After firing to stated temperature)

Temperature, °F	Permanent Linear Change, %	Modulus of Rupture, psi	Cold Crushing 2" cube — psi	Hot MOR psi	Porosity %
220	0.0	1495	8275		16-18
1500	-0.1	1140	6000	2510	
1800			many trees many death	2130	
2000	- <b>6.</b> 2	1870	9000	1820	19-21
2500	-0.6	1360	8700	340	18-20
2900	. +1.4	2500	19,000		

Grain Size -4 mesh

Abrasion Loss (ASTM C-704) 7-10 cm3

## APPLICATION DATA:

Maximum Service Temperature (MST)	( °F)	3000
Amount Required for Installation	(pcf.)	142-145
Bulk Density - After Drying at 220°F	(pcf.)	144
- After Firing to 2500°F	(pcf.)	142
Water required for 100 lbs. dry (Approx.)	(wt.%)	Vib-Cast 6.0 -6.75 Pencil Vibrate - 6.75-8.00

# CHEMICAL DATA:

Alumina (Al₂O₃)	47.4	*	Lime (CaO)	2.2	%
Silica (SiO <sub>2</sub> )	46.2	<b>%</b> -	Magnesia (MgO)	.1	%
Titania (TiO <sub>2</sub> )	1.8	%	Alkalies (Na <sub>2</sub> O, K <sub>2</sub> O)	1.2	%
Ferric Oxide (Fe <sub>2</sub> O <sub>3</sub> )	. 4	%	L.O.I.	. 4	%

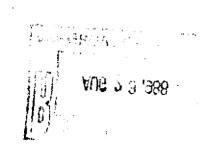
7/88

#### FOR COATINGS , RESINS AND RELATED MATERIALS

)	DATE OF PR	EPARA	1\8 -HOITA	18/88		<del>የ</del> ሶ	GE 1
NUFACTURER'S NAME :	RODDA PAINT	COMPY	YMF				
DDRESS :	6932 S.W. MA FORTLAND, OR						
MERGENCY TELEPHONE NO VECTOR ACTION TELEPHONE							• NAM 414 415 141 141
	SECTION I	PROI	OUCT IDENT	TIFICATION			4 1114 441 444 417 1771 197
NUFACTURER'S CODE II RODUCT CLASS: ALKYD RADE NAME: ALL PU 11S INFORMATION **	ENAMEL JRPOSE EQUIPM	ENT E	ENAMEL - S	2		NT- H	
47 PROG 1998, 1747 PROG 1741 ) PROG 1894 III 10 1091 1790 1790 1890 1890 1890 1890 1890 1890 1890 18	SECTION II	HAZ	ZARDOUS IN	NGREDIENTS	ag years privat for the Mayord Private Served artest dry	*** 2-4 1200	***************************************
ARCINOGENICITY: THE	MATERIALS IN , OR OSHA AS				BEEN LIST	TED BY NT	"F" •
INGREDIENT TERIAL DESCRIPTION		200 1914 <b>2</b> 12 1991 19	% BY WEIGHT	TLV-(	(TWA) MG/M3	LEL FF	YAFOR RESSURE B 068DF
KYD RESIN SOLUTION	· · · · · · · · · · · · · · · · · · ·	1	50 - 100	100.00	525.001	1.01	.10
ONTMORILLONITE	171011-26-	2	- <u> </u>	INOT ESTI	5.001	)	i radi repr start blag ptot re
DYA LECITHIN	•		.5 - 5	INOT ESTIN	OT ESTI	1	1 ****
		·					
JTILE TITANIUM DIOXII	74 6 <b>164</b> 71 17 1767 6167 6167 18 19 1767 7766 1767 1877 1877 1777		.5 - 5			****	14 1801 Pust 5751 \$165 5771 5871
HIHALOCYANINE BLUE	E (13463-67-	7			10.001		10 1001 Page 1001 (100 1000 1000 1000 1000 1000 100
. 183 1464 1465 1465 1465 1465 1465 1476 1476 1476 1476 1476 1476 1476 1476	E (13463-67-	7	.5 - 5	INOT ESTI	10.00		1 2001 2001 2001 2001 2000 2000 1000 10

\_IPHATIC HYDROCARBON |64742-88-7 | 5 - 10 | 125.00|NOT EST| 1.0| .10

% CALCIUM DRIER | | .5 - 5 | 200.00[NOT EST] .9| .10



813898 41040 3114

SECTION III PHYSICAL DATA

BOILING RANGE

HIGH . 384.0

L.OW

VAPOR PRESSURE

.10

VAPOR DENSITY EVAPORATION RATE HEAVIER THAN AIR SLOWER THAN BUTYL ACETATE

WEIGHT PER GALLON

8.01

% VOLATILE BY VOLUME % VOLATILE BY WEIGHT

60.61

49.65

APPEARANCE-ODOR- BLUE LIQUID

SECTION IV -- FIRE AND EXPLOSION HAZARD DATA

\_AMMABILITY CLASSIFICATION OSHA-CLASS II DOT- COMBUSTIBLE LIQUID DWEST FLASHPOINT T.C.C. 100.0 LOWER EXPLOSION LEVEL (LEL) .9

KTINGUISHING MEDIA: (Yes)-FOAM (Yes)-ALCOHOL FOAM (Yes)-CO2

(Yes)-DRY CHEMICAL (Yes)-WATER FOG (N/A)-OTHER

lanket fire with one of the above extinguishing media.

VUSAL FIRE AND EXPLOSION HAZARDS: Vapors are heavier than air and may ravel along the ground or be moved by ventilation and ignited by heat, (lot lights, other flames and ignition sources at locations distant from aterial handling point. Never use welding or cutting torch on or near drum ev a empty) because product (just residue) can ignite EXPLOSIVELY! PEWIAL FIRE FIGHTING PROCEDURES: For fires involving this material, do not nter any enclosed or confined fire space without proper protective equipent. Self-contained breathing apparatus with a full facepiece operated in ressure-demand or other positive pressure mode to protect against the azardous effects of normal products of combustion or oxygen deficiency.

#### SECTION V -- HEALTH HAZARD DATA

FFECTS OF OVEREXPOSURE: FOR PRODUCT-EYES: Can cause irritation, redness, paring, blurred vision. SKIN:Frolonged or repeated contact can cause moder te irritation, defatting, dermatitis.

RIMARY ROUTE(S) OF ENTRY: (Yes)-DERMAL (Yes)-INHALATION (Yes)-INGESTION REATHING: Excessive breathing of vapors can cause masal and respiratory rritation, dizziness, weakness, fatique, nausea, headache, possible unconciousness, and even asphyxiation. SWALLOWING: Can cause gastrointestinal rritation, nausea, vomiting, and diarrhea. Aspiration of material into ungs can\_cause chemical pneumonitis which can be fatal.

MERGENCY & FIRST AID PROCEDURES: SKIN- Wash exposed area with soap & water YES-Flush with large amounts of water. INGESTION- Do not induce vomitinget medical attention! INHALATION-If affected, remove to fresh air. If reathing is difficult, administer oxygen. If breathing has stopped, give rtificial respiration. Get medical attention.

EDICAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE: None known.

SECTION VI -- REACTIVITY DATA

WIR 5 3 1868

ILITY: ( )-UNSTABLE (Yes)-STABLE

YZARDOUS POLYMERIZATION ( )-MAY OCCUR (XXX)- WILL NOT OCCUR

YZARDOUS DECOMPOSITION PRODUCTS- Normal combustion forms carbon dioxide & ster vapor; incomplete combustion can produce carbon monoxide.

NDITIONS TO AVOID-Excessive temperatures.

YCOMPATIBILITY (MATERIALS TO AVOID)- Strong oxidizing agents (Nitric Acid. ermanganates, MEK Peroxide, Etc.)

#### SECTION VII SPILL OR LEAK PROCEDURES

TEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Eliminate all inition sources (flares, flames including pilot lights & electrical parks). Fersons not wearing protective equipment should be excluded from rea of spill until clean-up has been completed. Stop spill at source, dike rea of spill to prevent spreading, pump liquid to salvage tank. Remaining iquid may be taken up on sand, clay, earth, floor absorbent, or other aborbent material and shoveled into containers. Prevent run-off to sewers, treams, or other bodies of water.

ASTE DISPOSAL METHOD- Destroy by liquid incineration. Material collected n absorbent material may be deposited in an approved toxic substance and fill in accordance with local, state, and federal regulations.

SECTION VIII-- SAFE HANDLING AND USE INFORMATION

ESPIRATORY PROTECTION: If TLV of the product or any component is exceeded. It is in it is approved self-contained breathing apparatus with a limit face piece operated in pressure demand or other positive pressure mode advised; however, OSHA regulations also permit other NIOSH/MESA respirtors under specified conditions. (See your safety equipment supplier). ENTILATION: Provide sufficient mechanical and/or local exhaust to maintain sposure below TLV(s).

re FROTECTION: Chemical splash goggles in compliance with OSHA regulations re-advised.

ROTECTIVE GLOVES: Wear resistant gloves such as:, BUNA-N.

THER PROTECTIVE EQUIPMENT: To prevent repeated or prolonged skin contact. ear impervious clothing and boots.

YGENIC PRACTICES: Wash hands before eating or using washroom.

#### SECTION IX-- SPECIAL PRECAUTIONS

RECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in a cool, dry area. seep away from heat, sparks, and open flame. Keep containers closed when of in use. Use only with adequate ventilation.

THER PRECAUTIONS: Containers of this material may be hazardous when nptied. Since emptied containers retain product residues (vapor, liquid. nd/or solid), all hazard precautions given in this data sheet must be precautions.

EAD AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL!

the openings

打印。 …

41040

Material Safety Data Sheet  May be used to comply with OSEA's Hasard Communication Standard.  BCFR 1910, 1200, Standard must be employed for specific requirements.			;	QUICK DENTIFIER Common Name: (used on label and lim) UHU Glu-Stic U-26-U-125				
			•					
SECTION 1 -							<u> </u>	
Manufamprer's Manu	Fahe	r-Castell Co	rooration					
Address		Spring Place			Emergenor Telephone No.	615/359 <u>~</u> )58	3	
City, State, and ELF	Levi	sburg, Th.	37091		Interesation Calls	201/483-464	6	
Signature of Portuo Responsible for Propuret	ion (Optional)	andre	wToro	£	Propulation of the Propulation o	Sept. 9. 198	Α	
SECTION 2 - H	AZARDO	US INGREDII	ents/iden					
Hazardous Compunentia	ichemeni 4 (	MARION REDARDS		osha Pel	<b>ACCIH</b>	Other Expenses Limite	ropusms))	CAS NO.
Contains no	Harardon	s Ingredient						
·	_ <del>  </del>					····	·	
		3				1		
					<u> </u>			
					- BU V - F B V	***************************************	<u> </u>	
								-
SECTION 3 - PH	rysical .	& CHEMICAL (	CHARACTE	RISTICS				
Boding Point N. A			S. Oi	isonth (K'O=1) isonth	мг	Vapor Pressure inten	Hen N B	
***************************************	0	aper ereity (Air = 1)	N_B			,		1
ia Water 10	108		ti. W	ster	None		7	
Appearance and Oder Ship 5	te Soft	Salid		tiung XNS		ns - 80°C		
SECTION 4 - F			\TA		AULT !			
FIRSK POINT N. A.P. C.	Mythod Used	N.A.	Flammable I in Air 'r by	omes LEL	4 4	UEL Upper N.A		
Auto-Ignition Temperature N.A.		Estinguaher						*
Special Fire Fighung Procedures		flammable	NC	n-flamm	E P			
				· · · · · · · · · · · · · · · · · · ·				
Unusual Fire and Explosion Hazards	Non-	-flammable						
								······································
			····					
	·							
		·····						

Material Safety Data Sheet					QUICK IDENTIFIER Common Name: lund on label and lint					
May be used to comply with OSKA's Hazard Communication Standard. BPCFR 1910, 1300, Standard must be computed for specific requirements.						UNU Glu-Stic U-26-U-125				
SECTION 1 -				<del></del>		-				
Mamulactures's Name	Faber	-Castall Cor	poration							
Address City, State, and ELP	551 5	oring Place	Rđ.		Emergency Telephone i Other Information Calls		1591583	·		
Signature of Person Responsible for Preparati		ourg, Th.	17091 	,	Date Prepared		483-4646	<del></del>		
SECTION 2 - H		<i>(Moneu</i> S ingredien	TO GOR	TY		Sept	9. 1988		- <del></del>	
Kasardous Compensaties		سندون ورب سندارون		osha Pel	YCCIH TLV	Other E	xbours	ing (options)	CAS NO.	
Contains no !	(azardous	Ingredients								
						· · · · · · · · · · · · · · · · · · ·				
				- T-110-2-2-2-4						
		***								
	<del></del>			· · · · · · · · · · · · · · · · · · ·		<del></del>				
								· · · · · · · · · · · · · · · · · · ·		
SECTION 3 - PH	YSICAL &	CHEMICAL CH	iaracteri:	STICS						
Boiling Point N. A			Špeci Grave	ise ty ( <b>K,O=</b> ti	M F	V. P.	ipor reasure istra Hgs	N.A.		
	Vapo Dena	r Hy faw # H	N A						'	
Solibility in Water 100	) \$	· · · · · · · · · · · · · · · · · · ·	React Water	ivily in	None			·		
Appearance	e Soft So	1144	Melu Point	ng		nns - F	0.94			
SECTION 4 - FI	-		A			<u> </u>	<u> </u>			
Flash Fount N. EF. C.	Mythod Used	N.A.	Flammable Limits Air & by Volu	u LEL	N.A.	UEL Uppe	N.A.		····	
Auto-Ignition Temperature		Entinguisher Media	No.	flamma						
Special Fire Fighting Procedures	Non-fi	ammable	NON	LIAUNDA	NI P				<del></del>	
						·				
Unusual Fire and Explosion Hazards	Non-f	ammable								
									<del></del>	
		· · · · · · · · · · · · · · · · · · ·				<del></del>		<del></del>		
				<u></u>						
				-				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	<del> </del>	
							·· · · · · · · · · · · · · · · · · · ·			

Stable S to Ave	Lieds			<u> </u>
COMPACABILITY	None			
Manage to Armet	<u>e</u>			
userious reservosition Freducts				
Hardous May Occu	None Conditions			
lymanastana Will Nos Ocea	K X 19 XVOID	£		
ECTION 6 - HEAL	TH HAZARDS		·	
Asiu		2 Chrosse		
me sad		N	ione	· · · · · · · · · · · · · · · · · · ·
mpicans of Expenses	None			
		····		
edical Conditions Generally Egravered by Exposure	None Known			
,		•		
remical Listed as Carcineges Potential Carcineges	Mational Ton Program	ueology Yes S	I.A.R.C. Yes Monographs No A	OSHA Yes 3
riergendy sied est isid Procedures				
St 14d Proceeding	None required.			
1. Inhatation	N.A.			
OUTES \ I E ; "	And the second second			
F )	Wash with	WATER.		
NTRY / 3. Shia	wash with	water.		
4. Ingescion				
			sted - treat as so	ap - See Physicia
	AL PRECAUTIONS	AND SPILL/LE	AK PROCEDURES	
ecautions to be Taken Handling and Storage	Vone			
	None			
(App				
reconting	None			
teps to be Taken is Case (the fails Released or Spilled				
	Non-hazard	HUIS WARES.		
Vacca Dispensi				
lethoda (Consult federal, stat	a, and total regulations:	ionahazardous.	MASTA.	
SECTION 9 - SPE	TAL PROTECTIO	N INFORMATIO	N/CONTROL MEASI	IRES
frapristory Protection	J.,122 - 110 - 200 110			
Specity Types	N.A.			
Vensulation	Exhaust IV B	), inchanicai (General)	Special N.A. N.A.	Other N.A.
		Eye		H464
Trotective		2 1948	N.A.	
Protective Dieves N	<u> </u>			
N N				

F22

# MATERIAL SAFETY DATA SHEET

24-HOUR EMERGENCY ASSISTANCE	GENERAL ASSISTANCE	NFPA FIRE HAZARD SYMBOL
BP America (In Ohio): 800-362-80 <del>5</del> 9 (Outside Ohio): 800-321-8642 CHEMTREC Assist: 800-424-9300	716-278-2000	Flamerockity 3-High 2-Moderase 1000
MSDS Number > BK2		Special O-insgnittrans Hazanda -See Text

MANUFACTURER: The Carborundum Company - Fibers Division ADDRESS: P.O. Box 808, Niagara Falls, New York 14302

# SPECIFICATION THE ATTENDED

TRADE NAME:

FIBERFRAX ® 970 A, F & J PAPER

CAS NUMBER:

NA

SYNONYM(8):

CERAMIC FIBER; REFRACTORY FIBER; MMVF

CHEMICAL FAMILY:

VITREOUS ALUMINOSILICATE FIBERS

MOLECULAR FORMULA: NA MOLECULAR WEIGHT: NA

-----

NA

PRODUCT CODE:

NA

HIERARCHY: NA

# PROTUGENTIAL SPECES AND IN

HEALTH

WARNING!

MAY BE HAPMFUL IF INHALED

MAY BE IRRITATING TO THE SKIN, BYES AND RESPIRATORY TRACT.

vossible cancer earard based on tests with laboratory animals

FLAMMABILITY

NON-COMBUSTIBLE

REACTIVITY

STABLE

## EFFECTS OF OVEREXPOSURE

#### INGESTION:

May cause quatrointestinal disturbances. Symptoms may include irritation, nauses, vomiting and diarrhes.

#### SKIN:

SLIGHTLY TO MODERATELY IRRITATING. May cause irritation and inflammation due to

\*Copyright © 1980, National Fire Protection Assoc., MA 02269.

This reprinted material is not the complete and official position of the NFPA on the referenced subject, which is represented only by the standard in its entirety.

JUN 27 '91 13:18 FROM WESTERN IND. CERAMICS

PAGE.002

M0055

mechanical reaction to sharp, broken ends of fibers.

#### EYE:

FLIGHTLY TO MODERATELY IRRITATING. Absentive action may cause damage to the outer surface of the eye.

#### INHALATION:

May cause respiratory tract irritation. Pre-existing medical conditions may be aggravated by exposure; specifically, broughial hyper-reactivity and chronic bronchial or lung disease.

#### SPECIAL TOXIC EFFECTS:

Currently, there are no known chronic health effects in humans from long-term exposure to caramic fibers.

In animal studies, refrectory ceramic fibers injected into the peritoneal (abdominal) cavity have caused scute abdominal hemorrhage in hamsters but not in rate. Such injections into the abdominal or pleural cavities have also produced tumors in life-time rat and hamster studies. In fact, similar results have been observed with numerous other fibrous and non-fibrous materials. In such experiments, this abnormally sensitive injection technique is a non-physiological method of exposure, bypassing both normal pulmonary protective and clearance mechanisms.

Recently published inhalation studies have provided contradictory results. One study, which used rats as the experimental animal, reported lung damage consisting of alveolar proteinosis and interstitial fibrosis, whereas, other studies using rate and hamsters, showed no similar effects.

similarly, the pulmonary tumor-causing potential of refractory ceramic fibers in animals is unclear. Two inhalation studies suggest a low-order potential in inducing pulmonary tumors in animals, while other inhalation and intratracheal injection studies conclude that ceramic fibers are not tumorigenic in animals. The international Agency of Research on Cancer (IARC) has recently reviewed the animal, human and other relevant experimental data on man made mineral fibers in order to critically evaluate and classify the cancer causing potential of these materials. Based on its review, IARC classified fibrous glass wool, mineral wool (both rock wool and slag wool) and ceramic fiber as group 2B carcinogens. By definition, a group 2B egent is possibly carcinogenic to humans. For refractory ceramic fibers, IARC's 2B classification was based on sufficient evidence of carcinogenicity in experimental animals in the absence of human epideminologic data.

Further animal and human health studies are planned. Pending the results of these studies, strict adherence to recommended safe work practices described elsewhere in this data sheet is advised.

# INGESTION:

Do not induce vomiting. Get medical attention if irritation persists.

#### SKIN CONTACT:

Wash area of contact thoroughly with soap and water. Do not rub or scratch emposed skin. Using a skin cream or lotion after washing may be helpful. Get medical attention if irritation persists.

#### EYE CONTACT:

Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Do not rub eyes. Get medical attention if irritation persists.

ND = No Data
NA = Not Applicable

BK2 /Page 2 of 6

M0055

#### INHALATION:

Remove affected person from source of exposure. Get medical attention,

# PERSONAL PROTECTION THEORMATION

The following personal protective guidelines should be followed, especially where angineering controls (e.g. machanical dust collection and other mashs of exhaust ventilation) are not technically feasible or do not reduce airborne fiber concentrations to below 2 fibers/cc.

#### EYE PROTECTION:

Wear safety glasses or chemical goggles to prevent eye contact. Do not wear contact lenses when working with this substance. Have eye washing facilities readily available where are contact can occur.

#### SKIN PROTECTION:

Wear gloves, hats or full body clothing to prevent skin contact as nacessary. Use separate lockers for work clothes to prevent fiber transfer to street clothes. Avoid taking unwashed work clothes home or provide disposable work clothing. Wash work clothes separately from other clothing. Rinse washing machine thoroughly after use. If clothing is to be laundered by someone else, inform launderer of proper procedures.

#### RESPIRATORY PROTECTION:

Use NIOSE or MSHA approved equipment when airborne exposure limits are exceeded. NIOSH/MSKA approved breathing equipment may be required for non-routine and emorgoncy use. Ventilation may be used to control or reduce aimborne concentrations. Acceptable respirators recommended for given airborne ceramic fiber concentrations are:

#### Concentration

Up to 20 f/cc

# Respirator Type

Half-face air purifying respirator such as (1) a cartridge respirator with appropriate dust cartridges or (2) a disposable dust respirator (3M 8710 or equivalent).

> 20 \$/gg to 200 \$/gg

Full-face respirator with highefficiency filters.

> 200 #/cc

Full-face, positive-pressure supplied air respirator.

OSER approved air source required. Pending the results of long-term health effects studies, mirhorne exposures should be controlled at or below the BP America recommended exposure guidelines listed in the Ingredients/Realth Information Section.

BOILING POINT:

NA

SPECIFIC GRAVITY:

ND

MELTING POINT:

ND

% VOLATILE: ND

VAPOR PRESSURE: NA

EVAPORATION RATE (WATER=1): NA

ND - No Data NA = Not Applicable

BK2 /Page 3 of 6 JUN 27 '91 13:21 - FROM WESTERN IND. CERAMICS PAGE . 991

PHGE.UUD

M0055

VAPOR DENSITY (AIR#T):

VISCOSITY:

% SOLUBILITY IN WATER:

NA

POUR POINT: NA

oH: NA

APPEARANCE/ODOR: NO

FLASH POINT:

NONE

**AUTOIGNITION TEMPERATURE:** FLAMMABILITY LIMITS IN AIR (% BY VOL.) LOWER: NONE

NĎ

UPPER:

ND

BASIC FIREFIGHTING PROCEDURES:

Use extinguishing agent suitable for type of surrounding fire.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

NA

STABILITY/INCOMPATIBILITY:

Stable under normal conditions of use. Incompatible with hydrofluoric acid and concentrated alkali.

HAZARDOUS REACTIONS/DECOMPOSITION PRODUCTS:

NA

SPILL OR RELEASE TO THE ENVIRONMENT:

where possible, use vacuum suction to clean up spilled material. Use dust suppressant where sweeping is necessary. Avoid Glean up procedures that may result in water pollution. Personal safety and exposure recommendations described elsewhere in this data sheet apply to emposure during clean up of spilled material.

WASTE DISPOSAL:

This substance, when discauded or disposed of, is not specifically listed as a hazardous waste in Federal regulations; however it could be hazardous if it is sonsidered toxic, corrosive, ignitable, or reactive according to Federal definitions (40 CFR 261). Additionally, it could be designated as hazardous according to state regulations. substance could also become a hazardous weste if it is mixed with or comes in contact with a hazardous waste. If such contact or mixing may have occurred, check 40 CFR 261 to determine whether it is a hazardous waste. If it is a hazardous waste, regulations at 40 CFR 262, 263, and 264 apply.

The transportation, storage, treatment, and disposal of this waste material must be conducted in compliance with all applicable Federal, state, and local regulations.

ADDITIONAL ENVIRONMENTAL REGULATORY INFORMATION:

There may be specific regulations at the local, regional or state level that partain to this material.

ND = No Data NA - Not Applicable

BK2 /Page 4 of 6

PAGE.002

M0055

# PENALURECAUTIONS SUPPLEMENTAEN FOR MATION TO THE PARTY OF THE

#### HANDLING/STORAGE:

use adequate ventilation or other precautions to eliminate vapors resulting from binder burnoff. Emposure to burnoff funes may cause respiratory tract irritation, bronchial hypex-reactivity and astbmatic response.

product which has been in sorvice at elevated temperatures (greater than 1800 F) may undergo partial conversion to cristobalite, a form of crystalline silics which can cause severe respiratory disease -- "Pneumoconiosis". The amount of cristobalite present will depend on the temperature and length in service.

ranc has recently reviewed the animal, human and other relevant emperimental data on silica in order to critically evaluate and classify the cancer causing potential. Based on its review, TARC classified crystalline silica as a group 2A carcinogen. By definition a group 2A carcinogen is probably carcinogenic to humans. For exystalline silics, IARC's 2A classification was based on limited evidence of carcinogenicity in humans and sufficient avidence of carcinoqunicity in experimental animals.

The OSRA permissible exposure limit (PEL) for respirable mineral dusts containing cristobalite is determined by the following formula: 1/2 (10 mg/M3)/(\$ SiO2 + 2); for example 189 cristobalite: 1/2(10)/(18+2) = 0.25 mg/M3 (OSEA). The ACGIE recommends an 8-hour time weighted average (TWA) threshold limit value of 0.05 mg/H3 for cristobalite (respirable dust) (ACCIH 1987-98). Particular care should be taken when working with "used" material to minimize generation of dust. When removing and handling ceramic fiber used in high temperature applications, special caution should be taken to avoid unnecessary cutting and tearing of the used material to minimize generation of airborne dust. Use NIOSE or MSEA approved equipment when airborne emposure limits may be exceeded, especially in confined areas with inadequate ventilation or other areas. Acceptable respirators recommended for given airborne cristobalite concentrations are:

#### Concentration

Up to 10 times the PEL

10 to 100 times the PKL

> 100 times the PEL

# Respirator Type

Helf-face cartridge respirator with high-efficiency filters. Full-face cartuidge mempirator with high-efficiency filters. Full-face, positive-pressure suppliedair respirator.

# AND AND RESIDENCE OF THE STATE 
D.O.T. HAZARD CLASS (49 CFR 172.101):

NA

D.O.T. PROPER SHIPPING NAME (49 CFR 172,101):

NA

D.O.T. LABELS REQUIRED (49 CFR 172.101):

NA

D.O.T. PLACARDS REQUIRED: NA

BILL OF LADING DESCRIPTION: NO

UN/NA CŌĎ義: NA

ND ~ No Oata NA - Not Applicable BK2 /Page 5 of 6 JUN 27 '91 13:22 FROM WESTERN IND. CERAMICS

PAGE.003

M0055

Component	CAS NO	. 1 %	REFERENCE -
Aluminosilicate (vitraous)	NA.	85-90	2 fibers/cc TWA (BP America);* 10 fibers/cc CL (BP America)*
organic binder**	<u></u>		None established
Remaining components not determined hererdous and/or hererdous components present at less than 1,0% (0.1% for	на	Trace	NA
arcinogena).			
*No OSBA or ACGIE exposure 1 Pending the results of long- should be controlled at or b guidelines listed above.	term health	effects stu	dies, airborne exposures
*No OSBA or ACGIE exposure l Pending the results of long- should be controlled at or b	term health malow the BP	effects stu America Rec	dies, airborne exposures ommended exposure
Fending the results of long- should be controlled at or b guidelines listed above.	term health malow the BP	effects stu America Rec	dies, althorne exposures ommended exposure

NOTICE: The information presented hereix is based on data considered to be accurate as of the date of preparation of this Mitterial Safety Data Sheet. However, no warranty or representation, express or implied, is made as to the accuracy or completeness of the foregoing data and safety information, nor is any authorization given or implied to practice any patented invention without a license. In addition, no responsibility can be assumed by vendor for any damage or injury resulting from abnormal use, from any failure to achieve to recommended practices, or from any hazards inherent in the nature of the product.





HARBISON-WALKER REFRACTORIES

Dresser Industries, Inc.

One Gateway Center, Pittsburgh, Pennsylvania 15222

TELEPHONE: 412-562-6200

#### DISCLAIMER

11-17-88

This data sheet is based on OSHA FORM 174 but modified to more adequately suit refractory products. All data are subject to reasonable variation. This information is supplied in good faith by Harbison-Walker and is applicable to the product as shipped. Your application of the product may change its characteristics. THE DATA PROVIDED HEREIN ARE BELIEVED CORRECT OR ARE OBTAINED FROM SOURCES BELIEVED TO BE GENERALLY RELIABLE. HARBISON-WALKER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF THIS PRODUCT, AND HARBISON-WALKER ASSUMES NO OBLIGATION OR LIABILITY FOR RELIANCE OF THE INFORMATION CONTAINED IN THIS DATA SHEET. This data is not part of any contract or condition of sale. It is solely supplied as an accommodation to the buyer.

#### SECTION I - PRODUCT IDENTIFICATION

Product Tradename: ALUSA CASTABLE

Type of Refractory: High Alumina Castable

SEE CHECKED BLOCKS INGREDIENT	GEN. CHEM. FORMULA	C.A.S. NUMBER	PERCENTAGE RANGE	OSHA P.E.L.	ACGIH TLV ®	NIOSH CRITERIA DOCUMENT NO
□ Quartz	SiO2	14808-607		10 mg/m² % Respirable Quartz +2	0.1 mg/m³	75-120
XI Cristobalite	SiO <sub>2</sub>	14464-46-1	0 - 1	1/2 Quartz Value	0.05 mg/m³	75-120
□ Tridymite	SiO2	15468-32-3		1/2 Quartz Value	0.05 mg/m³	75-120
☐ Fused Silica	SiO2	60676-86-0		20 mppcf	Use Quartz TLV	75-120
☐ Coal Tar Products	N/A	65996-93-2		0.2mg/m³	0.2 mg∕m³	78-107
☐ Petroleum Pitch	N/A	8052-42-4		NONE	0.2 mg∕m³	78-106
☐ Phosphoric Acid*	H₃PO₄	7664-38-2		1.0 mg/m³ (mist)	1.0 mg/m³	NONE
□ Magnesia	MgO	1309-48-4		10 mg/m³	10 mg∕m³	NONE
Č Free Alumina*	Al2O3	1344-28-1	7 - 8	10 mg/m³	10 mg∕m³	NONE
& Lime	CaO	1305-78-8	2 - 3	5.0 mg/m³	2.0 mg/m³	NONE
☐ Chrome III Oxide*	Cr2O3	1308-38-9		1.0 mg/m³	0.5mg∕m³	NONE
0						

<sup>\*</sup> Subject to reporting under Section 313, Sara Title III

SECTION III - PHYSICAL DATA	
Appearance and Odor: Light gray color; earthy cdor	FORM:
Specific Gravity: 2.30 pH: ND	Brick
Solubility in Water: Slight Calcium Aluminate Cement	_x Granular
- Other:	Paste

#### **SECTION IV - FIRE AND EXPLOSION DATA**

UNLESS OTHERWISE NOTED, NONE Product is a refractory, and will not burn.

NOTES:

	SECTION V - HEALTH HAZARD DATA*						
'SEE CHECKED BLOCK		EXPOSUR	E REQUIRED				
INGREDIENT	EFFECTS OF OVEREXPOSURE	PROLONGED	SHORT TERM				
☑ Free Crystalline Silica	Delayed lung fibrosis - silicosis	V					
	Skin, lung mucous membrane carcinogen	· · ·					
☐ Coal Tar Products	Skin irritation; photosensitization		V				
☐ Petroleum Pitch	(Same as Coal Tar Products)	<b>V</b>	V				
□ Magnesia	Irritant to skin, eyes, mucous membranes, etc.		₩				
☐ Lime	irritant to skin, eyes, mucous membranes, etc.		1				
✓ Free Alumina	frritant to skin, eyes, mucous membranes, etc		7				
☐ Fused Silica	Delayed lung fibrosis-silicosis	V					
☐ Phosphoric Acid	Primary Irritant - skin, eyes, etc.		1/				
☐ Chrome III Oxide	Irritant to skin, eyes, mucous membranes, etc.		1/				
	·	_					
		<u> </u>					
	skin or flush from eyes using copious amounts of water. emove from skin by washing with soap and water. DO NOT use solvents. Sam	e for Petroleum	n Pitch.				
· · · · · · · · · · · · · · · · · · ·	SECTION VI - REACTIVITY DATA						
STABILITY: Ø STABL		terial to avoid)					
Hazardous decomposition	products:		ļ				
Hazardous Polymerization	may occur & will not occur CA Cement Warning						
	may be landfilled. However, since your application of this product may change its a may vary with locale and are subject to change, you should consult the go iformation.		The state of the s				
	SECTION VIII - SPECIAL PROTECTION INFORMATION TION (CHECK ONE): XD Approved Dust   Other (Specify):						
PROTECTIVE GLOVES (	aust ventilation should be provided if routine operation generates dust in exces CHECK TYPE):  ☐ Acid Resistant □ Impermeable ② Abrasion Resistant □ roved safety glasses, goggles or faceshields should be used when handling refra	Other (Specify)					
FOOT PROTECTION (CH PROTECTIVE CLOTHING	ECK TYPE): □ Metatarsal safety □ Impermeable 3 (SPECIFY):						
	SECTION IX - SPECIAL PRECAUTIONS						
and/or irritation to ey	oduct contains coal tar pitch, petroleum pitch or creosote. Over-exposure to dust/ res, skin and respiratory tract. umes; use with proper ventilation. NIOSH approved respirators and protective clo						
irritation of skin, eyes. skin; avoid breathing							
CX If block is checked, the incidence of cancer in	ne product contains crystalline silica for which there is limited evidence of a pos I humans.	ssible associatio	n with th <del>e</del>				
Prepared By: C.	D. Jamison Emergency	Phone: 412-56	62-6437				





TELEPHONE: 412-562-6200

#### DISCLAIMER

11-21-88

This data sheet is based on OSHA FORM 174 but modified to more adequately suit refractory products. All data are subject to reasonable variation. This information is supplied in good faith by Harbison-Walker and is applicable to the product as shipped. Your application of the product may change its characteristics. THE DATA PROVIDED HEREIN ARE BELIEVED CORRECT OR ARE OBTAINED FROM SOURCES BELIEVED TO BE GENERALLY RELIABLE. HARBISON-WALKER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF THIS PRODUCT, AND HARBISON-WALKER ASSUMES NO OBLIGATION OR LIABILITY FOR RELIANCE OF THE INFORMATION CONTAINED IN THIS DATA SHEET. This data is not part of any contract or condition of sale. It is solely supplied as an accommodation to the buyer.

#### **SECTION I - PRODUCT IDENTIFICATION**

**Product Tradename:** 

H-W LIGHTWEIGHT CASTABLE 22

Type of Refractory:

Insulating Castable

SECTION II - HAZARDOUS INGREDIENTS						
SEE CHECKED BLOCKS INGREDIENT	GEN. CHEM. FORMULA	C.A.S. NUMBER	PERCENTAGE RANGE	OSHA P.E.L.	JSIH TLV ₾	NIOSH CRITERIA DOCUMENT NO.
2 Quartz	SiO2	14808-607	0 - 3	10 mg/m³ % Respirable Quartz +2	0.1 mg/m³	75-120
ズ Cristobelite	SiO2	14464-46-1	2 - 5	1/2 Quartz Value	0.05 mg/m³	75-120
☐ Tridymite	SiO2	15468-32-3		½ Quartz Value	0.05 mg/m³	75-120
☐ Fused Silica	SiO <sub>2</sub>	60676-86-0		20 mppcf	Use Quartz TLV	75-120
☐ Coal Tar Products	N/A	65996-93-2	,	0.2mg/m³	0.2 mg/m³	78-107
☐ Petroleum Pitch	N/A	8052-42-4	:	NONE	0.2 mg/m³	78-106
☐ Phosphoric Acid*	H3PO4	7664-38-2		1.0 mg/m³ (mist)	1.0 mg/m³	NONE
☐ Magnesia	MgO	1309-48-4		10 mg/m³	10 mg/m³	NONE
☐ Free Alumina*	Al <sub>2</sub> O <sub>3</sub>	1344-28-1		10 mg/m³	10 mg/m³	NONE
XI Lime	CaO	1305-78-8	15 - 16	5.0 mg/m³	2.0 mg/m³	NONE
□ Chrome III Oxide*	Cr2O3	1308-38-9		1.0 mg/m³	0.5mg/m³	NONE
0						
a a						
c i	1					

<sup>\*</sup> Subject to reporting under Section 313, Sara Title III

SECTION III - PHYSICAL DATA				
Appearance and Odor:	Gray to	tan color; earthy odor	FORM:	
Specific Gravity:0.	89	pH: ND	Brick	
Solubility in Water:	Slight	Calcium Aluminate Cement	X Granular	
Other:			Paste	

#### **SECTION IV - FIRE AND EXPLOSION DATA**

UNLESS OTHERWISE NOTED. NONE Product is a refractory, and will not burn.

F				
		SECTION V - HEALTH HAZARD DATA*		
	ECKED BLOC			RE REQUIRED
	DIENT	EFFECTS OF OVEREXPOSURE	PROLONGED	SHORT TERM
्रि Free Cry	rtelline Silica	Delayed lung fibrosis - silicosis	V	
☐ Coal Tar	Products	Skin, lung mucous membrane carcinogen  Skin irritation: photosensitization	<i>V</i>	
☐ Petroleur	- Disah		1/	$\frac{\nu}{\nu}$
		(Same as Coal Tar Products)	<i>V</i>	<del></del>
☐ Magnesia	<u> </u>	Irritant to skin, eyes, mucous membranes, etc.		<b>V</b>
⅓ Lime		Irritant to skin, eyes, mucous membranes, etc.		<u> </u>
☐ Free Alur	nina	Irritant to skin. eyes, mucous membranes, etc		V
☐ Fused Sil	Ca	Delayed lung fibrosis-silicosis	V	
☐ Phosphoi	ic Acid	Primary Irritant - skin, eyes, etc.		<b>v</b>
☐ Chrome I	II Oxide	Irritant to skin, eyes, mucous membranes, etc.		<b>V</b>
0				
		AID PROCEDURES:		
	ar Products: A	skin or flush from eyes using copious amounts of water. emove from skin by washing with soap and water. DO NOT use solvents. Sam	e for Petroleum	Pitch.
		OCOTION VI. DEA CONTINUE DATA	<del></del>	
		SECTION VI - REACTIVITY DATA		
	図 STABL ecomposition olymerization:	products: Store in dry location		se
	<del></del>	SECTION VII - SPILL AND LEAK PROCEDURES		
since dispo	sai procedure: for disposai in	may be landfilled. However, since your application of this product may change its on the series with locale and are subject to change, you should consult the governmetion.		
<u> </u>	<del></del>		<del></del>	
		SECTION VIII - SPECIAL PROTECTION INFORMATION		
RESPIRAT	ORY PROTECT	FION (CHECK ONE):   Approved Dust  Other (Specify):		
VENTILATI	ON: Local exh	ust ventilation should be provided if routine operation generates dust in excess		
PROTECTIVE EYE PROTE	VE GLOVES (C ECTION: Appr	:HECK TYPE): □ Acid Resistant 및 Impermeable 및 Abrasion Resistant 및 Coved safety glasses, goggles or faceshields should be used when handling refrac	ther (Specify): tory products.	
	TECTION (CH VE CLOTHING	ECK TYPE):   Metatarsal safety  Impermeable (SPECIFY):		:
		SECTION IX - SPECIAL PRECAUTIONS		
and/or i Do not b	rritation to eye	duct contains coal tar pitch, petroleum pitch or creosote. Over-exposure to dust/v is, skin and respiratory tract. Imes; use with proper ventilation. NIOSH approved respirators and protective cloth		
☐ If block	is checked, th	is resin bonded product contains free formaldehyde and phenol. Exposure to di nose, and throat. Allergic skin reaction may also occur. Avoid prolonged or repe ust or yapor. Wash thoroughly after handling. Wear rubber gloves and approve	ated contact wi	th eyes or
曼 if block		product contains crystalline silics for which there is limited evidence of a poss		
Prepare	i By: C	. D. Jamison Emergency (	Phone: 412-56	2-6437



## HARBISON-WALKER REFRACTORIES

Dresser Industries, Inc.

One Gateway Center, Pittsburgh, PA 15222

ASH GROVE CEMENT CO.

13939 N. RIVERGATE BLVD.

PORTLAND, OREGON 97203

ATTN: H. MATHESON

To Our Valued Customer:

In response to your request, enclosed please find the Material Safety Data Sheets that you requested. Any problems or questions, please feel free to contact me at 412-562-6513 or Mr. C. D. Jamison at 412-562-6437.

Sincerely yours,

HARBISON-WALKER REFRACTORIES

Diane M. Menzies

Diane M. Menzies

DMM/mos

Enclosure



TELEPHONE: 412-562-6200

#### DISCLAIMER

11-22-88

This data sheet is based on OSHA FORM 174 but modified to more adequately suit refractory products. All data are subject to reasonable variation. This information is supplied in good faith by Harbison-Walker and is applicable to the product as shipped. Your application of the product may change its characteristics. THE DATA PROVIDED HEREIN ARE BELIEVED CORRECT OR ARE OBTAINED FROM SOURCES BELIEVED TO BE GENERALLY RELIABLE. HARBISON-WALKER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF THIS PRODUCT, AND HARBISON-WALKER ASSUMES NO OBLIGATION OR LIABILITY FOR RELIANCE OF THE INFORMATION CONTAINED IN THIS DATA SHEET. This data is not part of any contract or condition of sale. It is solely supplied as an accommodation to the buyer.

SECTION I - PRODUCT IDENTIFICATION				
Product Tradename:		Type of Refractory:		
	VARNON	Fireclay Brick		

		SECTION	V II - HAZARDOU	S INGREDIENTS		
SEE CHECKED BLOCKS INGREDIENT	GEN. CHEM. FORMULA	C.A.S. NUMBER	PERCENTAGE RANGE	OSHA P.E.L.	ACGIH TLV ®	NIOSH CRITERIA DOCUMENT NO.
□ Quartz	\$iO2	14808-607		10 mg/m³ % Respirable Quartz +2	0.1 mg/m³	75-120
	SiOz	14464-46-1	18-22	1/2 Quartz Value	0.05 mg/m³	75-120
☐ Tridymite	SiO <sub>2</sub>	15468-32-3		1/2 Quartz Value	0.05 mg/m³	75-120
☐ Fused Silica	SiO <sub>2</sub>	60676-86-0		20 mppcf	Use Quartz TLV	75-120
☐ Coal Tar Products	N/A	65996-93-2		0.2mg/m³	0.2 mg/m³	78-107
☐ Petroleum Pitch	N/A	8052-42-4		NONE	0.2 mg/m³	78-106
☐ Phosphoric Acid*	H <sub>3</sub> PO <sub>4</sub>	7664-38-2		1.0 mg/m³ (mist)	1.0 mg/m³	NONE
□ Magnesia	MgO	1309-48-4		10 mg/m³	10 mg∕m³	NONE
□ Free Alumina*	Al <sub>2</sub> O <sub>3</sub>	1344-28-1		10 mg/m³	10 mg/m³	NONE
□ Lime	CaO	1305-78-8		5.0 mg/m³	2.0 mg/m³	NONE
☐ Chrome III Oxide*	Cr2O3	1308-38-9		1.0 mg∕m³	0.5mg/m³	NONE
0						
0						

<sup>\*</sup> Subject to reporting under Section 313, Sara Title III

	SECTION III - PHYSICAL DATA	
	Buff to orange color; no odor	FORM:
Specific Gravity:2.	32 pH:ND	X Brick
Solubility in Water:	Insoluble	Granular
Other:		Paste
	·	

SECTION IV - FIRE AND EXPLOSION DATA	
UNLESS OTHERWISE NOTED, NONE Product is a refractory, and will not burn.	
NOTES:	

	SECTION V - HEALTH HAZARD DATA*					
*SEE CHECKED BLOCK	S	EXPOSUR	E REQUIRED			
INGREDIENT	EFFECTS OF OVEREXPOSURE PROLONGED SH					
द्भ Free Crystalline Silica	Delayed lung fibrosis - silicosis	V				
☐ Coal Tar Products	Skin, lung mucous membrane carcinogen	V				
	Skin irritation; photosensitization		<u> </u>			
☐ Petroleum Pitch	(Same as Coal Tar Products)	V				
☐ Magnesia	Irritant to skin, eyes, mucous membranes, etc.		<u> </u>			
Lime	Irritant to skin, eyes, mucous membranes, etc.		<u> </u>			
☐ Free Alumina	Irritant to skin, eyes, mucous membranes, etc	ļ	<u> </u>			
☐ Fused Silica	Delayed lung fibrosis-silicosis	<i>V</i>				
☐ Phosphoric Acid	Primary Irritant - skin, eyes, etc.		<u> </u>			
☐ Chrome III Oxide	Irritant to skin, eyes, mucous membranes, etc.		<b>V</b>			
EMERGENCY OR FIRST	AID DRACEDURES.					
□ Other:	emove from skin by washing with soap and water. DO NOT use solvents. San  SECTION VI - REACTIVITY DATA					
STABILITY: STABL Hazardous decomposition Hazardous Polymerization:	products:	iterial to avoid)				
	SECTION VII - SPILL AND LEAK PROCEDURES					
	may be landfilled. However, since your application of this product may change its s may vary with locale and are subject to change, you should consult the go iformation.					
	SECTION VIII - SPECIAL PROTECTION INFORMATION					
RESPIRATORY PROTECTION (CHECK ONE): Approved Dust Other (Specify):						
PROTECTIVE GLOVES (6 EYE PROTECTION: Appr	VENTILATION: Local exhaust ventilation should be provided if routine operation generates dust in excess of allowable limits  PROTECTIVE GLOVES (CHECK TYPE): □ Acid Resistant □ Impermeable ☑ Abrasion Resistant □ Other (Specify):  EYE PROTECTION: Approved safety glasses, goggles or faceshields should be used when handling refractory products.  FOOT PROTECTION (CHECK TYPE): ☑ Metatarsal safety □ Impermeable					
PROTECTIVE CLOTHING	S (SPECIFY):					
	SECTION IX - SPECIAL PRECAUTIONS					
If block is checked, product contains coal tar pitch, petroleum pitch or creosote. Over-exposure to dust/volatiles may cause cancer and/or irritation to eyes, skin and respiratory tract. Do not breathe dust/fumes; use with proper ventilation. NIOSH approved respirators and protective clothing should be worn while handling this product.						
irritation of skin, eyes. skin; avoid breathing	his resin bonded product contains free formaldehyde and phenol. Exposure to , nose, and throat. Allergic skin reaction may also occur. Avoid prolonged or rep dust or vapor. Wash thoroughly after handling. Wear rubber gloves and appro	eated contact w ved NIOSH resp	vith eyes or birator.			
(区 if block is checked, the incidence of cancer in	ne product contains crystalline silica for which there is limited evidence of a po humans.	ssible associatio	on with the			
Prepared By: C.	. D. Jamison Emergence	/ Phone: 412-50	62-6437			



TELEPHONE: 412-562-6200

	-				_	_
DI	51	-L	ΑI	м	E	н

11-22-88

This data sheet is based on OSHA FORM 174 but modified to more adequately suit refractory products. All data are subject to reasonable variation. This information is supplied in good faith by Harbison-Walker and is applicable to the product as shipped. Your application of the product may change its characteristics. THE DATA PROVIDED HEREIN ARE BELIEVED CORRECT OR ARE OBTAINED FROM SOURCES BELIEVED TO BE GENERALLY RELIABLE. HARBISON-WALKER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF THIS PRODUCT, AND HARBISON-WALKER ASSUMES NO OBLIGATION OR LIABILITY FOR RELIANCE OF THE INFORMATION CONTAINED IN THIS DATA SHEET. This data is not part of any contract or condition of sale. It is solely supplied as an accommodation to the buyer.

# Product Tradename: HA ANCHORS Type of Refractory: High Alumina Brick

		SECTION	V II - HAZARDOU	S INGREDIENTS		
SEE CHECKED BLOCKS INGREDIENT	GEN, CHEM. FORMULA	C.A.S. NUMBER	PERCENTAGE RANGE	OSHA P.E.L.	ACGIH TLV &	NIOSH CRITERIA DOCUMENT NO.
□ Quartz	SiO2	14808-607		10 mg/m³ % Respirable Quartz +2	0.1 mg∕m³	75-120
☎ Cristobalite	SiO2	14464-46-1	5 - 7	1∕2 Quartz Value	0.05 mg/m³	75-120
☐ Tridymite	SiO2	15468-32-3		⅓ Quartz Value	0.05 mg∕ m³	75-120
☐ Fused Silica	\$iOz	60676-86-0		20 mppcf	Use Quartz TLV	75-120
☐ Coal Tar Products	N/A	65996-93-2		0.2mg/m³	0.2 mg/m³	78-107
☐ Petroleum Pitch	N/A	8052-42-4		NONE	0.2 mg/m³	78-106
☐ Phosphoric Acid*	H3PO4	7664-38-2		1.0 mg/m³ (mist)	1.0 mg/m³	NONE
□ Magnesia	MgO	1309-48-4		10 mg/m³	10 mg/m³	NONE
ጂ Free Alumina*	Al2O3	1344-28-1	0 - 0.5	10 mg∕ m³	10 mg/m³	NONE
□ Lime	CaO	1305-78-8		5.0 mg/m³	2.0 mg/m³	NONE
□ Chrome III Oxide*	Cr2O3	1308-38-9		1.0 mg/m³	0.5mg∕m³	NONE
0					,	
o						
٥						

<sup>\*</sup> Subject to reporting under Section 313, Sara Title III

	SECT	ION III - PHYSICAL DATA	
Appearance and Odor:  Specific Gravity:	Buff color; no odor .53	ND	FORM: X Brick
Solubility in Water:	Insoluble		Granular
Other:			Paste
l			

SECTION IV - FIRE AND EXPLOSIO	Ν	DATA
--------------------------------	---	------

UNLESS OTHERWISE NOTED, NONE Product is a refractory, and will not burn.

NOTES:

	SECTION V - HEALTH HAZARD DATA*		
*SEE CHECKED BLOCK	(S	EXPOSUR	RE REQUIRED
INGREDIENT	EFFECTS OF OVEREXPOSURE	PROLONGED	SHORT TERM
Free Crystalline Silica	Delayed lung fibrosis - silicosis	· /	
□ Coal Tar Products	Skin, lung mucous membrane carcinogen	$\nu$	
	Skin irritation; photosensitization		<u> </u>
□ Petroleum Pitch	(Same as Coal Tar Products)		<u> </u>
□ Magnesia	Irritant to skin, eyes, mucous membranes, etc.		<u> </u>
☐ Lime	Irritant to skin, eyes, mucous membranes, etc.		<u> </u>
Free Alumina	Irritant to skin, eyes, mucous membranes, etc		<u> </u>
☐ Fused Silica	Delayed lung fibrosis-silicosis		
☐ Phosphoric Acid	Primary Irritant - skin, eyes, etc.		₹
Chrome III Oxide	Irritant to skin, eyes, mucous membranes, etc.		<u> </u>
Other:			
	SECTION VI - REACTIVITY DATA		
, ,	SECTION VII - SPILL AND LEAK PROCEDURES  may be landfilled. However, since your application of this product may char  i may vary with locale and are subject to change, you should consult t  formation.	-	
VENTILATION: Local exhibitions (CO)	SECTION VIII - SPECIAL PROTECTION INFORMATION  TION (CHECK ONE):   Approved Dust  Other (Specify):  aust ventilation should be provided if routine operation generates dust in  HECK TYPE):  Acid Resistant  Impermeable  Approximation Resistant	t 🗆 Other (Specify):	
• •	oved safety glasses, goggles or faceshields should be used when handling ECK TYPE):   Metatarsal safety     Impermeable   (SPECIFY):	refractory products.	
	SECTION IX - SPECIAL PRECAUTIONS		
and/or irritation to eye Do not breathe dust/fu handling this product.	duct contains coal tar pitch, petroleum pitch or creosote. Over-exposure to es, skin and respiratory tract. emes; use with proper ventilation. NIOSH approved respirators and protecti	ve clothing should be w	vorn while
irritation of skin, eyes, skin; avoid breathing d	is resin bonded product contains free formaldehyde and phenol. Exposu nose, and throat. Allergic skin reaction may also occur. Avoid prolonged lust or vapor. Wash thoroughly after handling. Wear rubber gloves and a	or repeated contact wi approved NIOSH respi	ith eyes or irator.
If block is checked, the incidence of cancer in	e product contains crystalline silica for which there is limited evidence of humans.	a possible association	n with the
Prepared By: C.	D. Jamison Emer	gency Phone: 412-56	2-6437



TELEPHONE: 412-562-6200

#### DISCLAIMER

11-22-88

This data sheet is based on OSHA FORM 174 but modified to more adequately suit refractory products. All data are subject to reasonable variation. This information is supplied in good faith by Harbison-Walker and is applicable to the product as shipped. Your application of the product may change its characteristics. THE DATA PROVIDED HEREIN ARE BELIEVED CORRECT OR ARE OBTAINED FROM SOURCES BELIEVED TO BE GENERALLY RELIABLE. HARBISON-WALKER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF THIS PRODUCT, AND HARBISON-WALKER ASSUMES NO OBLIGATION OR LIABILITY FOR RELIANCE OF THE INFORMATION CONTAINED IN THIS DATA SHEET. This data is not part of any contract or condition of sale. It is solely supplied as an accommodation to the buyer.

SECTION I - PRODUCT IDENTIFICATION					
Product Tradename: UFALA PLASTIC	Type of Refractory: High Alumina Plastic				

	SECTION II - HAZARDOUS INGREDIENTS					
SEE CHECKED BLOCKS INGREDIENT	GEN. CHEM. FORMULA	C.A.S. NUMBER	PERCENTAGE RANGE	OSHA P.E.L.	ACGIH TLV ®	NIOSH CRITERIA DOCUMENT NO.
⊠ Quartz	SiO2	14808-607	0 - 2	10 mg/m³ % Respirable Quartz +2	0.1 mg/m³	75-120
<b>№</b> Cristobalite	SiO <sub>2</sub>	14464-46-1	0 - 2	1/2 Quartz Value	0.05 mg/m³	75-120
☐ Tridymite	SiO <sub>2</sub>	15468-32-3		½ Quartz Value	0.05 mg/m³	75-120
☐ Fused Silica	SiO <sub>2</sub>	60676-86-0		20 mppcf	Use Quartz TLV	75-120
☐ Coal Tar Products	N/A	65996-93-2		0.2mg/m³	0.2 mg∕m³	78-107
☐ Petroleum Pitch	N/A	8052-42-4		NONE	0.2 mg/m³	78-106
☐ Phosphoric Acid*	H₃₽O4	7664-38-2		1.0 mg∕m³ (mist)	1.0 mg/m³	NONE
□ Magnesia	MgO	1309-48-4		10 mg∕m³	10 mg/m³	NONE
Ğ Free Alumina*	Al2O3	1344-28-1	0 - 0.5	10 mg∕m³	10 mg/m³	NONE
□ Lime	CaO	1305-78-8		5.0 mg/m³	2.0 mg/m³	NONE
☐ Chrome III Oxide*	Cr2O3	1308-38-9		1.0 mg/m³	0.5mg/m³	NONE
0						
0						
	}					

\* Subject to reporting under Section 313, Sara Title III

SECTION III - PHYSICAL DATA						
Appearance and Odor: Brown color; earthy odor	FORM:					
Specific Gravity: 2.40 pH:	ND Brick					
Solubility in Water: Insoluble	Granular					
Other:	Paste					

SECTION IV - FIRE AND EXPLOSION DATA	
UNLESS OTHERWISE NOTED, NONE Product is a refractory, and will not burn.	
NOTES:	

	SECTION V - HEALTH HAZARD DATA*		
SEE CHECKED BLOCK	s	EXPOSU	E REQUIRED
INGREDIENT	EFFECTS OF OVEREXPOSURE	PROLONGED	SHORT TERM
双 Free Crystalline Silica	Delayed lung fibrosis - silicosis	V	
☐ Coal Tar Products	Skin, lung mucous membrane carcinogen	V	
- Coal fai Products	Skin irritation; photosensitization		V
☐ Petroleum Pitch	(Same as Coal Tar Products)	V	<i>V</i>
☐ Magnesia	Irritant to skin, eyes, mucous membranes, etc.		V
☐ Lime	Irritant to skin, eyes, mucous membranes, etc.		
Ճ Free Alumina	Irritant to skin, eyes, mucous membranes, etc		₹
☐ Fused Silica	Delayed lung fibrosis-silicosis	V	
☐ Phosphoric Acid	Primary Irritant - skin, eyes, etc.		1/
☐ Chrome III Oxide	Irritant to skin, eyes, mucous membranes, etc.		V
		1	
EMERGENCY OR FIRST			
Other:	SECTION VI - REACTIVITY DATA		
STABILITY: & STABL	atomo in cool location	material to avoid)	se
Hazardous decomposition Hazardous Polymerization		prior as a	
Hazardous r drymenzation	. I may occur is will not occur		
jurisdiction for disposal in	s may vary with locale and are subject to change, you should consult the parties.	governmental aut	nority naving
	SECTION VIII - SPECIAL PROTECTION INFORMATION		
	TION (CHECK ONE):   Approved Dust   Other (Specify):		
PROTECTIVE GLOVES (	naust ventilation should be provided if routine operation generates dust in exc CHECK TYPE):   Acid Resistant  Impermeable  Abrasion Resistant  roved safety glasses, goggles or faceshields should be used when handling re-	Other (Specify)	. ]
PROTECTIVE CLOTHING	G (SPECIFY):	<b></b>	
	SECTION IX - SPECIAL PRECAUTIONS		
and/or irritation to ey Do not breathe dust/f handling this product	oduct contains coal tar pitch, petroleum pitch or creosote. Over-exposure to dus res, skin and respiratory tract. umes; use with proper ventilation. NIOSH approved respirators and protective c his resin bonded product contains free formaldehyde and phenol. Exposure t	dothing should be	worn while
irritation of skin, eyes skin; avoid breathing	nis resin bonded product contains free formalderlyde and phenol. Exposure , nose, and throat. Allergic skin reaction may also occur. Avoid prolonged or r dust or vapor. Wash thoroughly after handling. Wear rubber gloves and appetence of a product contains crystalline silica for which there is limited evidence of a p	epeated contact w roved NIOSH rest	vith eyes or pirator.
incidence of cancer in			
Prepared By:	C. D. Jamison Emergen	cy Phone: 412-5	62-6437



TELEPHONE: 412-562-6200

DISCLAIM	

11-18-88

This data sheet is based on OSHA FORM 174 but modified to more adequately suit refractory products. All data are subject to reasonable variation. This information is supplied in good faith by Harbison-Walker and is applicable to the product as shipped. Your application of the product may change its characteristics. THE DATA PROVIDED HEREIN ARE BELIEVED CORRECT OR ARE OBTAINED FROM SOURCES BELIEVED TO BE GENERALLY RELIABLE. HARBISON-WALKER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF THIS PRODUCT, AND HARBISON-WALKER ASSUMES NO OBLIGATION OR LIABILITY FOR RELIANCE OF THE INFORMATION CONTAINED IN THIS DATA SHEET. This data is not part of any contract or condition of sale. It is solely supplied as an accommodation to the buyer.

SECTION I - PRODUCT IDENTIFICATION					
Product Tradename:	HARCAST	ES	ADTECH	Type of Refractory: Fireclay Castable	

		SECTION	N II - HAZARDOU	S INGREDIENTS		_
SEE CHECKED BLOCKS INGREDIENT	GEN. CHEM. FORMULA	C.A.S. NUMBER	PERCENTAGE RANGE	OSHA P.E.L.	ACGIH TLV ®	NIOSH CRITERIA DOCUMENT NO
□ Quartz	SiO2	14808-607		10 mg/m³ % Respirable Quartz +2	0.1 mg/m³	75-120
<b>₹</b> □ Cristobalite	SiO2	14464-46-1	5 - 10	1/2 Quartz Value	0.05 mg∕m³	75-120
☐ Tridymite	SiO2	15468-32-3		1/2 Quartz Value	0.05 mg/m³	75-120
☐ Fused Silica	SiO2	60676-86-0		20 mppcf	Use Quartz TLV	75-120
☐ Coal Tar Products	N/A	65996-93-2		0.2mg/m³	0.2 mg/m³	78-107
☐ Petroleum Pitch	N/A	8052-42-4		NONE	0.2 mg/m³	78-106
☐ Phosphoric Acid*	H <sub>3</sub> PO <sub>4</sub>	7664-38-2		1.0 mg/m³ (mist)	1.0 mg/m³	NONE
□ Magnesia	MgO	1309-48-4		10 mg/m³	10 mg/m³	NONE
©⊱Free Alumina*	Al <sub>2</sub> O <sub>3</sub>	1344-28-1	12 - 14	10 mg/m³	10 mg/m³	NONE
©X Lime	CaO	1305-78-8	4 - 5	5.0 mg/m³	2.0 mg/m³	NONE
☐ Chrome III Oxide*	Cr2O3	1308-38-9		1.0 mg/m³	0.5mg/m³	NONE
	 	 	_	!		<b>l</b> ,
	SIRL NUII iiber is neticeable	E: This product contains to workers during in	ns a proprietary organ nstallation. This tiber:	ic fiber to promote sale heat up of is non-toxic and should to treate	the reiractory. This	

\* Subject to reporting under Section 313, Sara Title III

•		SECTION III - PHYSICAL DATA	
		color; earthy odor	FORM:
Specific Gravity:	2.12	pH: ND	Brick
Solubility in Water:	Slight	Calcium Aluminate Cement	X Granular
Other:	_		Paste

SECTION IV - FIRE AND EXPLOSION DATA				
UNLESS OTHERWISE NOTED,	NONE Product is a refractory, and will not burn.			
NOTES:				

	SECTION V - HEALTH HAZARD DATA*		
SEE CHECKED BLOCK	s	EXPOSUR	E REQUIRED
INGREDIENT	EFFECTS OF OVEREXPOSURE	PROLONGED	SHORT TERM
🖳 Free Crystalline Silica	Delayed lung fibrosis - silicosis	V	
☐ Coal Tar Products	Skin, lung mucous membrane carcinogen	V	
U Coal far Products	Skin irritation; photosensitization		<u> </u>
☐ Petroleum Pitch	(Same as Coal Tar Products)	V	<i>V</i>
□ Magnesia	Irritant to skin, eyes, mucous membranes, etc.		<b>y</b>
Ş Lime	Irritant to skin, eyes, mucous membranes, etc.		v
Tree Alumina	Irritant to skin, eyes, mucous membranes, etc		₹/
☐ Fused Silica	Delayed lung fibrosis-silicosis	<b>V</b>	
☐ Phosphoric Acid	Primary Irritant - skin, eyes, etc.		₹
☐ Chrome III Oxide	Irritant to skin, eyes, mucous membranes, etc.		V
0			
l	AID PROCEDURES: skin or flush from eyes using copious amounts of water. semove from skin by washing with soap and water. DO NOT use solvents. Sam	e for Petroleun	n Pitch.
	SECTION VI - REACTIVITY DATA		
STABILITY: & STABL	E 🗆 UNSTABLE COMMENTS: Incompatability (ma	terial to avoid)	
Hazardous decomposition	products:		
Hazardous Polymerization	: □ may occur 👳 will not occur		
	may be landfilled. However, since your application of this product may change its is may vary with locale and are subject to change, you should consult the gonformation.		ı
	SECTION VIII - SPECIAL PROTECTION INFORMATION		
RESPIRATORY PROTEC	TION (CHECK ONE): 🖳 Approved Dust 🗆 Other (Specify):		
PROTECTIVE GLOVES (	naust ventilation should be provided if routine operation generates dust in exces CHECK TYPE): ㅁ Acid Resistant ㅁ Impermeable 및 Abrasion Resistant ㅁ roved safety glasses, goggles or faceshields should be used when handling refra	Other (Specify)	:
FOOT PROTECTION (CH PROTECTIVE CLOTHING	IECK TYPE): □ Metatarsal safety □ Impermeable 3 (SPECIFY):		
	• • • • • • • • • • • • • • • • • • • •		
	SECTION IX - SPECIAL PRECAUTIONS		
and/or irritation to ey	oduct contains coal tar pitch, petroleum pitch or creosote. Over-exposure to dust/ res, skin and respiratory tract. umes; use with proper ventilation. NIOSH approved respirators and protective clo		
irritation of skin, eyes	his resin bonded product contains free formaldehyde and phenol. Exposure to a , nose, and throat. Allergic skin reaction may also occur. Avoid prolonged or rep dust or vapor. Wash thoroughly after handling. Wear rubber gloves and approv	eated contact w	rith eyes or
If block is checked, the incidence of cancer in	he product contains crystalline silica for which there is limited evidence of a pos n humans.	ssible associatio	on with the
Prepared By: C	. D. Jamison Emergency	Phone: 412-56	62-6437

## FOR COATINGS , RESINS AND RELATED MATERIALS

	PAGE 1
MANUFACTURER'S NAME : RODDA PAINT COMPANY ADDRESS :	
ADDRESS : 6932 S.W. MACADAM AVENUE CITY, STATE : PORTLAND, OREGON 97219	
EMERGENCY TELEPHONE NO. DAY: (503) 244-7512 NIGHT: (503) 6 INFORMATION TELEPHONE NO. DAY: (503) 244-7512 NIGHT: (503) 6	
SECTION I PRODUCT IDENTIFICATION	
MANUFACTURER'S CODE IDENTIFICATION: 1998 — PRODUCT CLASS: ALKYD ENAMEL TRADE NAME: ALL PURPOSE EQUIFMENT ENAMEL—MEDIUM YELLOW HMIS INFORMATION ** HEALTH— 3* FLAMMABILITY— 2 REACTIVITY— 0 PERSONAL PROTECTIVE EQUIP	MENT- J
SECTION II HAZARDOUS INGREDIENTS	***************************************
INGREDIENT % BY TLV-(TWA)	VAPOR
INGREDIENT % BY TLV-(TWA) MATERIAL DESCRIPTION CAS# WEIGHT PPM MG/M3	
	S LEL PRESSURE MMHG @48DF
MATERIAL DESCRIPTION CAS+ WEIGHT PPM MG/M3	MHHG @48DF
MATERIAL DESCRIPTION CAS‡ WEIGHT PFM MG/M3  ALKYD RESIN SOLUTION     50 - 100   100.00  525.0	S LEL FRESSURE MMHG @48DF PO( 1.0) .10
MATERIAL DESCRIPTION CAS‡ WEIGHT PPM MG/M3  ALKYD RESIN SOLUTION     50 - 100   100.00  525.0  MONTMORILLONITE	3 LEL FRESSURE MMHG @48DF 00( 1.0) .10
MATERIAL DESCRIPTION CAS# WEIGHT PPM MG/M3  ALKYD RESIN SOLUTION     50 - 100   100.00  525.0  MONTMORILLONITE     71011-26-2   .5 - 5	3 LEL FRESSURE MMHG @48DF 00( 1.0) .10

SECTION IV -- FIRE AND EXPLOSION HAZARD DATA FLAMMABILITY CLASSIFICATION OSHA-CLASS II DOT- COMBUSTIBLE LIQUID LOWEST FLASHPOINT T.C.C. 100.0 LOWER EXPLOSION LEVEL (LEL)

(YES)-ALCOHOL FOAM (YES)-CO2 EXTINGUISHING MEDIA: (YES)-FOAM (YES)-WATER FOG (N/A)-OTHER (YES)-DRY CHEMICAL Blanket fire with one of the above extinguishing media. UNUSAL FIRE AND EXPLOSION HAZARDS: Vapors are beavier than air and may travel along the ground or be moved by ventilation and be ignited by heat, pilot lights, other flames and ignition sources at locations distant from material handling point. Never use welding or cutting torch on or near drum (even empty) because product (just residue) can ignite EXPLOSIVELY! SPECIAL FIRE FIGHTING PROCEDURES: For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment. Self-contained breathing apparatus with a full facepiece operated in pressure-demand or other positive pressure mode to protect against the hazardous effects of normal products of combustion or oxygen deficiency. In the event of fire, lead oxide (PbO) and chromium oxide (Cr203) could be produced.

#### SECTION V --- HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE: FOR PRODUCT-EYES: Can cause irritation, redness, terring, blurred vision. SKIN: Prolonged or repeated contact can cause m, erate irritation, defatting, dermatitis. Contains lead. Repeated and prolonged inhalation may cause delayed injury. See section II. See 29 CFR 1910.1025, Lead. Long term overexposure may cause cancer. PRIMARY ROUTES OF ENTRY: (YES)-DERMAL (YES)-INHALATION (YES)-INGESTION BREATHING: Excessive breathing of vapors can cause masal and respiratory irritation, dizziness, weakness, fatigue, nausea, haedache, possible unconsciousness, and even asphyxiation. SWALLOWING: Can cause gastrointestinat irritation, nausea, vomiting, and dirrhea. Aspiration of material into lungs can cause chemical pneumonitis which can be fatal. EMERGENCY & FIRST AID PROCEDURES: SKIN-Wash exposed area with soap & water. EYES-Flush with large amounts of water. INGESTION-Do not induce vomitingget medical attention! INHALATION-If affected, remove to fresh air. If breathing is difficult, administer oxygen. If breathing has stopped, give

artificial respiration. Get medical attention! MEDICAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE: As for lead above. SECTION VI -- REACTIVITY DATA

(YES)-STABLE

STABILITY: ( )-MAY OCCUR HAZARDOUS FOLYMERIZATION ( (XXX) WILL NOT OCCUR HAZARDOUS DECOMPOSITION PRODUCTS-Normal combustion forms carbon dioxide & water vapor; incomplete combustion can produce carbon monoxide. Lead and chromium oxides formed following ignition. CONDITIONS TO AVOID: Excessive temperatures.

INCOMPATIBILITY (MATERIALS TO AVOID)—Strong oxidizing agents (Nitric Acid, P manganates, MEK Preoxide, Etc.)

)-UNSTABLE

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Eliminate all ignition sources (flares, flames, including pilot lights & electrical sparks.) Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop spill at source, dike area of spill to prevent spreading, pump liquid to salvage tank. Remaining liquid may be taken up on sand, clay earth, floor absorbent or other absorbent material and shoveled into conatiners. Prevent run-off to sewers, streams, or other bodies of water.

WASTE DISPOSAL METHOD: Destroy by liquid incineration. Material collected on absorbent material may be deposited in an approved toxic substance landfill in accordance with local, state, and federal regulations.

SECTION VIII— SAFE HANDLING AND USE INFORMATION RESPIRATORY PROTECTION: If TLV of the product or any component is exceeded a NIOSH/MESA jointly approved self-contained breathing apparatus with a full face piece operated in pressure demand or other positive pressure mode is advised; however, OSHA regulations also permit other NIOSH/MESA respirators under specified conditions. (See your safety equipment supplier.) VENTILATION: Provide sufficient mechanical and/or local exhaust to maintain exposure below TLV(S).

EYE PROTECTION: Chemical splash goggles in compliance with OSHA regulations are advised.

P\_\_TECTIVE GLOVES: Wear resistant gloves such as; BUNA-N.

OTHER PROTECTIVE EQUIPMENT: To prevent repeated or prolonged skin contact, wear impervious clothing and boots.

HYGENIC PRACTICES: Wash hands before eating, smoking or using washroom.

#### SECTION IX-- SPECIAL PRECAUTIONS

FRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in a cool, dry area. Keep away from heat, sparks, and open flame. Keep containers closed when not in use. Use only with adequate ventilation.

OTHER PRECAUTIONS: Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in this data sheet must be observed.

READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL!!!
GAM 11/5/85



AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 1 OF 3

ZEP MANUFACTURING COMPANY
"ST IN MAINTENANCE PRODUCTS

DATE : 12/15/88 ZEPRIDE

SUPERSEDES: 10/21/88 PRODUCT NUMBER: 0547

SECTION I - EMERGENCY CONTACTS

ZEP MANUFACTURING COMPANY NON-OFFICE HOURS, WEEKENDS, AND HOLIDAYS: AREA CODE 404 P.O. BOX 2015 435-2973, 996-0899, 252-1587, 351-2952, 445-9226

ATLANTA, GEORGIA 30301 LOCAL POISON CONTROL CENTER ..............

TELEPHONE (404)352-1680 TRANSPORTATION EMERGENCY

BETWEEN 8:00A.M.-5:00P.M. CHEMTREC: TOLL FREE 1-800-424-9300 ALL CALLS RECORDED (EASTERN TIME ZONE) DISTRICT OF COLUMBIA (202)483-7616 ALL CALLS RECORDED

SECTION II - HAZARDOUS INGREDIENTS

TLV EFFECTS % IN
DESIGNATIONS (PPM) (SEE REVERSE) PROD.
@\*\* ETHYLENE GLYCOL MONOBUTYL ETHER \*\* 2-butoxyethan- 25 TOX IRR CBL 15-25

@\*\* ETHYLENE GLYCOL MONOBUTYL ETHER \*\* 2-butoxyethanol; butyl cellosolve; CAS# 111-76-2; RTECS#

KUS575000; OSHA PEL (SKIN)-50 ppm.

\*\* SODIUM METASILICATE \*\* silicic acid (H2-Si-O3) di- N/D COR < 5

sodium salt; water slass; CAS# 6834-92-0; RTECS#

VV9275000; OSHA Dust Limit-2mg/m3 (for powders only).

@ IDENTIFIES CHEMICALS LISTED UNDER SARA-SECTION 313 FOR RELEASE REPORTING.

SPECIAL NOTE: ADVERSE HEALTH EFFECTS WOULD NOT BE EXPECTED UNDER RECOMMENDED CONDITIONS OF USE SO LONG AS PRESCRIBED SAFETY PRECAUTIONS ARE PRACTICED.

SECTION III - HEALTH HAZARD DATA

ACUTE EFFECTS OF OVEREXPOSURE:

PRODUCT IN CONCENTRATED FORM IS A SEVERE EYE IRRITANT. OVER-EXPOSURE MAY LEAD TO EYE TISSUE DAMAGE WHICH CAN BE PERMANENT. SKIN CONTACT MAY PRODUCE IRRITATION. OF R-EXPOSURE BY INHALATION MAY CAUSE RESPIRATORY IRRITATION.

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.



By way of explanation, we have identified in section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29-CFR 1910.1200) and may be interpreted as follows:

# ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen-Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the

International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive-Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL: Flammable-At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 lb.) man is one teaspoon or more.

HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 iii.) man is one (suspensional line). ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation-A primary route of exposure through-breathing of vapors (see below).

IRR: Irritant-Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable-Category is not appropriate for this product.

N/D; Not Determined-Insufficient information for a determination for this item.

NIOSH; National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit-The time-weighted-average exposure value estimated by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value-A time-weighted-average exposure value established by the ACGIH for the work period described

TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This timeweighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve, only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to the use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary route of Entrythis item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat, flame, sparks or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and inaccordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products, Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent. with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

#### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which in the we believe to be reliable. The accuracy and completeness of such-data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss of damage resulting from the improper use or handling of our products, from incompatible product combinations, or from a failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.



AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 2 OF 3

ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS DATE : 12/15/88 ZEPRIDE

SUPERSEDES: 10/21/88 PRODUCT NUMBER: 0567

SECTION III - HEALTH HAZARD DATA (CONTINUED)

CHRONIC EFFECTS OF OVEREXPOSURE:

REPEATED OR PROLONGED SKIN CONTACT MAY PRODUCE CHRONIC INFLAMMATION OR DERMATIT-IS, CHARACTERIZED BY REDNESS, SCALING, OR ITCHING. REPEATED EYE EXPOSURE MAY PRODUCE CHRONIC INFLAMMATION OF THE EYE OR CORNEAL DAMAGE.

ANIMAL STUDIES INDICATE A POTENTIAL FOR LIVER, KIDNEY, OR RED BLOOD CELL DAMAGE. RELEVANCE OF THESE STUDIES OR EXPOSURE LEVELS WHICH MIGHT PRODUCE THESE EFFECTS IN HUMANS HAS NOT BEEN ESTABLISHED.

EST'D PEL/TLV: NOT ESTABLISHED PRIMARY ROUTES OF ENTRY: INH, SKIN.

HMIS CODES: HEALTH 2; FLAM. 0; REACT. 0; PERS. PROTECT. B ; CHRONIC HAZ. YES

FIRST AID PROCEDURES:

SKIN : IMMEDIATELY FLUSH CONTAMINATED SKIN WITH PLENTY OF WATER FOR AT LEAST 15

MINUTES, GET MEDICAL ATTENTION IMMEDIATELY.

EYES : IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, OC-CASIONALLY LIFTING UPPER AND LOWER LIDS. GET MEDICAL ATTENTION AT ONCE.

INMALE: MOVE EXPOSED PERSON TO FRESH AIR AT ONCE. IF BREATHING HAS STOPPED, PER-

FORM ARTIFICIAL RESPIRATION. GET MEDICAL ATTENTION IMMEDIATELY.

INGEST: IF THIS PRODUCT IS SWALLOWED, DO NOT INDUCE VOMITING. IF VICTIM IS

CONSCIOUS GIVE PLENTY OF WATER TO DRINK, GET MEDICAL ATTENTION AT ONCE.

SECTION IV - S P E C I A L P R O T E C T I O N I N F O R M A T I O N

PROTECTIVE CLOTHING : WEAR NEOPRENE, NITRILE, OR NATURAL RUBBER GLOVES OR

GLOVES WITH PROVEN RESISTANCE TO THE INGREDIENTS LISTED.

EYE PROTECTION : WEAR SPLASH-PROOF SAFETY GOGGLES ESPECIALLY IF CONTACT

LENSES ARE WORN.

RESPIRATORY PROTECTION: KEEP FACE AWAY FROM SPRAY MIST AND DO NOT BREATHE

VAPORS.

VENTILATION : VENTILATION SHOULD BE EQUIVALENT TO OUTDOORS. USE EX-

HAUST FANS AND OPEN WINDOWS IN ENCLOSED SPACES.

SECTION V - PHYSICAL DATA

: 1.02

BOILING POINT (F): ~220F SPECIFIC GRAVITY
VAPOR PRESSURE(MMHG): N/A PERCENT VOLATILE F
VAPOR DENSITY(AIR=1): N/A FVAPORATION RATE(A PERCENT VOLATILE BY VOLUME (%) : 91.8 VAPOR DENSITY(AIR=1): N/A EVAPORATION RATE(WATER SOLUBILITY IN WATER: COMPLETE PH(CONCENTRATE) =1): ~1.0

: 12.7

PH(USE DILUTION OF 1 OZ./GAL. ): 11.1

(TCC)

APPEARANCE AND ODOR :A CLEAR, DARK BLUE LIQUID WITH A "BUTYLATED" ODOR

SECTION VI - FIRE AND EXPLOSION DATA

FLWSH POINT(F) (METHOD USED): NONE FLAMMABLE LIMITS LEL N/A UEL N/A

EXTINGUISHING MEDIA : NOT COMBUSTIBLE

SPECIAL FIRE FIGHTING: NONE UNUSUAL FIRE HAZARDS : NONE

#### NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to ald you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date .

By way of explanation, we have identified in section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR-1910,1200) and may be interpreted as follows:

ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen-Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible-At temperatures between 100°F, and 200°F, chemical gives off-enough vapor to ignite if a source of ignition

is present.

CNS: Central Nervous System Depressant.

COR: Corrosive-Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL: Flammable-At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 lb.) man is one teaspoon or more.

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation-A primary route of exposure through breathing of vapors (see below).

IRR: Irritant-Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not. Applicable-Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit-The time-weighted-average exposure value estimated by OSHA for repeated exposure during

any 8 hours per day; 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value-A time-weighted-average exposure value established by the ACGIH for the work period described—under PEL, above:

TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the ESTD PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time-weighted average is arrived at by using a formula developed by the ACGIH for only those graduate where the hazardous ingreweighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to the use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary route of Entrythis item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized systemic: or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat, flame, sparks or other sources of ignition, they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent. with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which All statements, technical information and recommendations contained interest are passed on available. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from a failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet. BLE TOLK OF THE CONTRACT CONTRACT BEFORE LABORET CARROLL STORM OF THE CA



# MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 3 OF 3

ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS

DATE

: 12/15/88 ZEPRIDE

SUPERSEDES: 10/21/88 PRODUCT NUMBER: 0567

SECTION VII - REACTIVITY DATA

STABILITY |

: STABLE

INCOMPATIBILITY(AVOID) : NONE

POLYMERIZATION : WILL NOT OCCUR

HAZARDOUS DECOMPOSITION: NONE

SECTION VIII — SPILL AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: OBSERVE SAFETY PRECAUTIONS IN SECTIONS 4 % 9 DURING CLEAN-UP. ABSORB SPILL ON AN INERT ABSORBENT MATERIAL (@9 ZEP-O-ZORB); PICK UP AND PLACE IN A CLEAN D.O.T. SPECIFICATION CONTAINER FOR DISPOSAL. WASH AREA THOROUGHLY WITH A DETERGENT SOLUTION AND THEN RINSE WELL WITH WATER.

WASTE DISPOSAL METHOD:

LIQUIDS CANNOT BE SENT TO LANDFILLS UNLESS SOLIDIFIED. UNUSABLE PRODUCT AND SOME COLLECTED, SPENT USE-DILUTIONS MAY REQUIRE DISPOSAL AS A HAZARDOUS WASTE AT A PERMITTED TREATMENT/STORAGE/DISPOSAL FACILITY. IN MOST STATES HAZARDOUS WASTES IN TOTAL AMOUNTS OF 220 LBS. OR LESS PER MONTH MAY BE DISPOSED OF IN A CHEMICAL OR INDUSTRIAL WASTE LANDFILL. IF COMPANY EFFLUENT IS ULTIMATELY TREATED BY A PUBLICLY OWNED TREATMENT WORKS, NEUTRALIZATION OF SPENT TANK-SOLUTIONS WITH SUB-SPOUENT DISCHARGE TO THE SEWER MAY BE POSSIBLE. CONSULT LOCAL, STATE AND FED-E. \_ AGENCIES FOR PROPER DISPOSAL METHOD IN YOUR AREA.

RCRA HAZ. WASTE NOS.: DO02

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN WHEN HANDLING AND STORING:

STORE TIGHTLY CLOSED CONTAINER IN A DRY AREA AT TEMPERATURES BETWEEN 40 - 120 F. DEGREES.

STORE AWAY FROM STRONG ACIDS AND OXIDIZING COMPOUNDS.

DO NOT BREATHE SPRAY MISTS OR VAPORS.

KEEP AWAY FROM FOOD AND FOOD PRODUCTS.

KEEP OUT OF THE REACH OF CHILDREN.

SECTIONX - TRANSPORTATION DATA

DOT PROPER SHIPPING NAME

NONE

DOT HAZARD CLASS: N/A

Dr I.D. NUMBER : N/A DOT LABEL/PLACARD: NONE

EI- TSCA CHEMICAL INVENTORY - ALL INGREDIENTS ARE LISTED

EPA CWA 40CFR PART 117 SUBSTANCE(RQ IN A SINGLE CONTAINER): N/A

#### NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date

By way of explanation, we have identified in section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1206) and may be interpreted as follows: 

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen-Considered a potential or contirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible-At-temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition

is present.

COR: Corrosive-Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL: Flammable-At temperatures under 100°F, chemical gives off enough vapor to ignite if a source of ignition is present. HTX: Highly Toxic-The probable lethal dose for a 70 kg (150 lb.) man is one teaspoon or more.

ING: Ingestion-A primary route of exposure through swallowing of liquid or solid (see below).

INH: Inhalation-A primary route of exposure through breathing of vapors (see below).

IRR: Irritant-Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable-Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit-The time-weighted-average exposure value estimated by OSHA for repeated exposure during any 8 hours per day. 5 days per week without adverse effects.

any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value A time-weighted average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic-The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This timeweighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve, only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day; 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to the use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary route of Entry. this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic action.

or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat, flame sparks or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations, "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of. Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

#### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which is also as a statement of the contained herein are based on available scientific tests or data which is also as a statement of the contained herein are based on available scientific tests or data which is also as a statement of the contained herein are based on available scientific tests or data which is also as a statement of the contained herein are based on available scientific tests or data which is also as a statement of the contained herein are based on available scientific tests or data which is also as a statement of the contained herein are based on available scientific tests or data which is also as a statement of the contained herein are based on available scientific tests or data which is also as a statement of the contained herein are based on available scientific tests or data which is also as a statement of the contained herein are based on available scientific tests or data which is also as a statement of the contained herein are stateme we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate. all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from a failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.

ΑΠ	ERIAL SAFE	TY DATA SHEET	IDI	INTIFIER •	10 j (j g j			· · · · · · · · · · · · · · · · · · ·
			gyc	ARE-SIOL	1-5:00 FST	-MON-FRI 1 : 1-800-4	300-54 16-2647	3-4906
		15NT WEST INC.	10 - "	BOIS CHE	MICALS, I	NC  EMER	GENCY PHO	NE NO.
	THE LIME PLA	AMT Ivergate blvo.		30 E. KE Baronvill	MPER ROAD E. OHIO 4	5241 5	3-554-4	200
	PORTLAND; OF		-97283 ₹ PR	EPARED E	BY: M. ANT	OSIAK  REFE	RENCE /L# 2439	23.3
_			R	12/30/8		l Î	V¥ 01-8	33217
	ABBREVIATIONSC	CEILINGMP-MAXIMUM PEAK ENSS-SKINST-SHORT TERM	N/A-NOT APPLIC TLV-THRESHOLD	:ABLEN/K•NO <sup>-</sup> LIMIT VALUE1	T KNOWNP-POT [WA-TIME WEIGH"	'ENTIALPEL-PERI TED AVERAGE	MISSIBLE EXI	POSURE LIM
TION-1	COMMON NAME USED	ON LABEL DGG-			- Aller		CODE (13)	36
TION-2	CHEMICAL FAMILY PRINCIPAL HAZARDOL	<u>OPEN GHAR GREASE</u> JS COMPONENT(S) CHEMICAL & C	COMMON NAME	% EXPOSU	RE LIMITS (TWA 8 HOL	IR UNLESS OTHERWIS	E SPECIFIED)	UNITS
AADOUS Edients	NONE	. ,						
Y ITEMS TED ARÉ								
ARDOUS								
TITLE 190 FR								
0. 1200)								
TION-3	BOILING N/A POINT N/A VAPOR DENSITY N/A	F SPECIFIC VAPO GRAVITY 1 PRES	OR SSURE	A LIBRARY	√A mmHg@	°C VOLATILE BY VOLUME REACTIVITY H IN WATER / EVOL	-AT	0 %
SICAL & Emical	APPEARANCE & ODOR	BLACK: MILD DOOR	<1	SOLUBILITY IN WATER	0 %	O IN WATER / EVOL	UTION	NONE
RACTER- Stics	FLASH	COC FLAME	FLAMMAB		VER UPPER	AUTO IGNITION TEMPERATURE	hi / A	
FIRE &	POINT 425 °F		A in. IN AIR BY HEMICALS	AOLOWE 14 £	NE NONE	TEMPERATURE	N/A	
JATA)	FIREFIGHTING SPECIAL PROCEDURES	NONE						
	SPECIAL PROCEDORES				MT ST			
	UNUSUAL FIRE AND EXPLOSION HAZARDS	NOME						
TION-4	STABILITY	POLYMERIZATION						
YSICAL ZARDS	STABL S	STRONG OXIDIZERS						
	WITH DECOMPOSITION	CO, SEZ, WITH INC	JUMPLETE					
	PRODUCTS	COMBUSTION			Words	KIT)		
CTION-5	PRIMARY ROUTES OF ENT	E DEFATS SKIN: M	AY IRRITAT		INGESTION	<u>ио</u>		
	SIGNS	DIL MIST 5 MG/	43					
-	AND							
EALTH	SYMPTOMS 2 CHRC	DNIC SAME AS ACUTE						
ZARDS	OF	mo SAME AS ACCIE						
	OVEREXPOSURE							
		NERALLY SENSITIVE S	V T N'					
	AGGRAVATED BY EXPOSE	JRE	KIN				11/2	115
	LISTED CARCINOGEN EMERGENCY AND	NONE FIRST AID PROCEDURES			N	TP NO IARC	no No	OSHA NC
	1. INHALATION	N/A IN NORMAL OP	ERATION					
	2. EYES	FLUSH THOROUGHLY	WITH FRES	SH WATER	• GET MEDI	CAL ATTEN	TION	
	0.014151	TIME OF THE COCOL	TCD D		0040 480	MATCO		
	3. SKIN	FLUSH WITH FRESH REMOVE CONTAMINA	TED CLÓTH	S AND SI	HOES	WAICK		
	4 INCECTION	GIVE MILK. WATER	no acc us	שודני				
	4. INGESTION	INDUCE VOMITING.	GET MEDI	TAL ATTE	NTION			
	BRODIO LEONI DO OVERO		Sar Space 1 1 1 Name Start office 1					
CTION-6 PEÇIAL		NOWE				VENTILAT	ION LOCAL	NO
ITECTION Irmation	ACIALICATION MEDITATION	AL PRODUCING NORM None	AL AIR DII	_NOTION_	SPECIAL NON	1E		
	EYE PROTECTION	NOTE	•					
	OTHER PROTECTIVE	พลิพร						
CTION-7	CLOTHING/EQUIPMENT HANDLING	KEEP CONTAINER C	OVERED.					
	AND							
	STORAGE PRECAUTIONS							
	OTHER	VOLUNTARY: CAUTI	חווג מא למו	JTATMER	LABELS.			
PECIAL CAUTIONS	PRECAUTIONS					ADDE AMOU	ALTO TO	
AND	IF MATERIAL IS RELEASED/SPILLED	WIPE UP SMALL AM COMTAINER.	DOMES! CO	LECT AN	ט אבוטאא נ	ARGE AMUU	N 15 1U	
ILL/LEAK IÇEDURES								
	WASTE	OTSPOSE TO SOLID	WASTE		<del></del>			
	DISPOSAL METHODS							
	17,211,050							
-								
	HMIS RATING	HEALTH () FL	AMMABILITY 1	REACTIVITY	(1) ^	ERSOMAL DEOTROTION	<u>u</u>	
A.R.A.	This lating	NOME TO	SIMMODILITY I	NEAU IIVII Y	<u> </u>	ERSONAL PROTECTION	8	
TLE III CTION								
313		FIZA	-16.		p==, 1.1			
ATE OF		N/A						<del>_</del> _
OR .								

ATE: 05/06/88

RODUCT NAME 1: CARBON AND ALLOY CAST STEELS

RODUCT NAME 2: CLASS 1
DUCT NAME 3: \*RSDS\*

UTHOR(S):

OMMENT: ENDOR:

STEEL FOUNDERS SOCIETY OF AMERICA

IVISION:

.309 - 37 - 1

DDRESS: 455 STATE STREET

ITY, ST, ZIP: DES PLAINES, ILLINOIS 60016

IRON OXIDE

HONE:

AS NO. NAME

:4-4 CAPLAN-ANDERSON

'440-44-0 CARBON
'439-96-5 MANGANESE
'723-14-0 PHOSPHORUS

7704-34-9 SULFUR 7440-21-3 SILICON

7440-02-0 NICKEL

7440-47-3 CHROMIUM METAL

7439-98-7 MOLYBDENUM 7440-50-8 COPPER 7440-62-2 VANADIUM

7440-33-7 TUNGSTEN

JERR ID NAME

\_\_00-018 STEEL FOUNDERS SOCIETY OF AMERICA

STATES
\*\* NONE \*\*

MATERIAL SAFETY DATA SHEET (MSDS)

SC-000-009 REV. 6 DATE 05-06-88 CODE 24-4

CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200

"HAZARD COMMUNICATION" AND TO VARIOUS STATE

"EMPLOYEE RIGHT TO KNOW" LAWS

COPYRIGHT 1988 STEEL FOUNDERS SOCIETY OF AMERICA

SECTION I PRODUCT IDENTIFICATION

This MSDS supplied for: Carbon and Alloy Cast Steels\_

ASTM No. A27-84 ACI alloy designation (Grades) N-1, N-2, U-60-30, 60-30, 65-35, 70-36,

70-40

A128/A128M-84 A, B-1, B-2, B-3, B-4, E-1, E-2, F

A148/A148M-84 80-40, 80-50, 90-60, 105-85, 115-95,

135-125, 150-135, 160-145, 165-150,

165-150L, 210-180, 210-180L,

260-210, 260-210L

A216/A216M-84 WCA, WCB, WCC

A217/A217M-84 WC1, WC5

A352/A352M-84 LCA, LCB, LCC, LC1

A356/A356M-84 1, 2, 5

A426-80 CP1, CP2, CP15

A486/A486M-84 70, 90, 120

A487/A487M-84 1N, 2N, 4N, 6N, A, AN, B, BN, C, CN,

DN, 1Q, 2Q, 4Q, 4QA, 6Q, AQ, BQ, CQ

A597/A597M-84 CS-5

A660-79 WCA, WCB, WCC

A732/A732M-84 1A, 2A, 2Q, 3A, 3Q, 4A, 4Q, 5N, 6N,

13Q, 14Q

A757/A757M-84 AlQ, A2Q

SAE AUTOMOTIVE

J435c 0022, 0025, 0030, 0050A, 0050B, 080,

090, 0105, 0120, 0150, 0175

N/E means none established.

N/A means not applicable.

N/D means no data available.

AAR

M201-81

A, B, C, D, E

ABS

1, 2, 3, 4, Hull

ASTM No. FEDERAL

ACI alloy designation (Grades)

QQ-S-681F

N-1, N-2, U-60-30, 60-30, 65-35, 70-36,

70-40, 80-40, 80-50, 90-60, 105-85,

120-95, 150-125, 175-145

MIL-S-15083B (NAVY) CW, B, 65-35, 70-36, 80-40, 80-50, 90-60, 105-85, 120-95, 150-125

(1120 2)

180-150, 220-180, 260-210

MIL-S-46052A (MR)

LLOYDS

VENDOR NAME AND ADDRESS:

Spokane Steel Foundry

P.O. Box 3305

Spokane, Washington

99220

EMERGENCY PHONE NUMBER:

(509) 924-0440

FIRE HAZARD CLASS: HEALTH: 0 FLAMMABILITY: 0 REACTIVITY: 0

THE FOURTH DIAMOND:

ANSI: CAUTION: WELDING, CUTTING, OR GRINDING ON THIS CASTING WILL GENERATE IRRITATING DUST OR FUMES. SOME COMPONENTS ARE CANCER HAZARD BASED ON TESTS WITH LABORATORY ANIMALS. OVEREXPOSURE MAY CREATE CANCER RISK.

# SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Carbon	7440-44-0	0-1.45	N/E	N/E
Chromium*	7440-47-3	0-0.90	0.5 mg/cu.m	1 mg/cu.m
Copper* (As dust)	7440-50-8	0-0.50	1.0 mg/cu.m	1,0 mg/cu.m
(As fume)			0.2 mg/cu.m	0.1 mg/cu.m
Iron oxide (As fume)	1309-37-1	balance	5 mg/cu.m	10 mg/cu.m
Manganese*(As dust)	7439-96-5	0-14.0	C 5 mg/cu.m	C 5 mg/cu.m
(As fume)			l mg/cu.m _	C 5 mg/cu.m
Molybdenum	7439-98-7	0-2.1	10 mg/cu.m	15 mg/cu.m
Nickel*	7440-02-0	0-1.0	l mg/cu.m	1 mg/cu.m
Phosphorus	7723-14-0	0-0.07	0.1 mg/cu.m	0.1 mg/cu.m
Silicon	7440-21-3	0-2.25	10 mg/cu.m	15 mg/cu.m
			(as nuisanc	e dust)
Sulfur	7704-34-9	0-0.06	N/Ė	N/Ē
Tungsten	7440-33-7	0-0.25	5 mg/cu.m	N/E
Vanadium*(as vanadium	oxide)			•
(As dust)	7440-62-2	0-0.35	0.05 mg/cu.m	0.5 mg/cu.m
(As fume)			0.05 mg/cu.m	0.1 mg/cu.m
	9 3 3			3 3 44 A A A A A A A A A A A A A A A A A

C means ceiling limit. These are limits which should not be exceeded, even for a short time. All other limits are 8-hr Time-weighted average concentrations.

Elements having a listed percentage greater than zero will be present in all grades. Those having a value of "0" may not be present in certain grades. Refer to Steel Founders' Society of America "Steel Castings Handbook" Supplement 2 for specifications on a particular alloy and grade.

Certain forms of Nickel have been shown to cause cancer in However its potential to cause cancer in laboratory animals. humans has not been determined.

Water insoluble hexavalent chromium is classified as a suspect human carcinogen by the American Conference of Governmental Industrial Hygienists (ACGIH). Welding or flame cutting may convert a small percentage of the total chromium in welding fume to the water insoluble hexavalent form. There is no water insoluble hexavalent chromium in the solid alloy.

\*This constituent, a toxic chemical, makes this product subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. Quantity thresholds for this chemical, below which reporting of releases is not required, are 50,000 pounds for 1988, and 25,000 pounds for 1989 and subsequent years. Chemicals marked \*\*are reportable only if in the form of dust or fume.

N/E means none established. N/A means not applicable. N/D means no data available.

### SECTION III - OVERVIEW

There are no chemical hazards from these castings in solid form at room temperature.

Dust or fumes are generated by machining, grinding, or welding on these castings. Since the castings contain a high percent of iron, most of the dust or fume will be iron or iron oxide. There is no TLV for iron dust, but available information indicates that a concentration of 10 mg/cu.m., as if it were a nuisance dust, will serve as a guideline until a TLV is established.

High production dry machining of gray iron castings usually requires local exhaust ventilation.

Flame cutting, arc gouging, or welding on the casting generates iron oxide fume. Inhalation of too much iron oxide fume over a long time can cause siderosis, sometimes called "iron pigmentation" of the lung. It can be seen on a chest x-ray but causes little or no disability. Also see the Material Safety Data Sheet for the welding rod being used.

Some grades contain manganese. Long term overexposure to manganese dust or fume can cause manganese poisoning. If welding or flame cutting fume is controlled to the TLV for total fume, the manganese fume will also be controlled.

Some forms of nickel have been found to cause cancer in animals. One form, nickel subsulfide, which was present in an old smelting process no longer used, apparently caused nasal cancer in humans. Since then, studies have shown that the potential for ordinary forms of nickel and its oxides to cause cancer in humans is very weak, if it exists at all. The nickel content of the casting is so low (less than 1%) that over-exposure is not likely.

Grinding on castings that have not been cleaned or that have sand embedded in the iron will generate significant amounts of dust containing free silica, which can cause silicosis. Good local ventilation is frequently required to prevent over-exposure in this situation. If good ventilation is not available, use a NIOSH-approved dust respirator.

Carbon, chromium, copper, molybdenum, phosphorus, silicon, sulfur, tungsten, and vanadium are also contained in the casting in low amounts. Over-exposure to these would not be likely.

# SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Solid, silver gray in color, no odor

BOILING POINT: variable depending on casting grade VAPOR PRESSURE: N/A VAPOR DENSITY: N/A

SOLUBILITY IN WATER: N/A

SPECIFIC GRAVITY: 7.86 for iron PERCENT VOLATILE BY VOLUME: N/A

EVAPORATION RATE: N/A

# SECTION V - FIRE AND EXPLOSION DATA

Castings will not burn or explode.

\_\_\_\_\_\_

### SECTION VI - HEALTH HAZARD DATA

EYES: Metal particles in the eyes may cause irritation if not

SKIN: None known

BREATHING: Prolonged or repeated overexposure to iron oxide produced in grinding or welding may cause siderosis. Overexposure to manganese dust can cause manganism. Symptoms of manganism are sleepiness, weakness in the legs, emotional disturbances, uncontrollable laughter, and spastic gait. Breathing excessive amounts of silica dust for a long time can cause silicosis. Silicosis causes shortness of breath, reduced capacity to do work, and weakens the defenses against other lung diseases.

SWALLOWING: N/A

NOISE: Grinding or machining castings is noisy. The OSHA limit for noise averaged over 8 hours is 90 decibels (dBA), hearing conservation program required if exposure is over 85 dBA. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

### 

IF IN EYES: Metal particles should be removed by trained individuals such as a nurse or physician.

IF ON SKIN: N/A
IF BREATHED: (Fumes from welding): Move to fresh air.

IF SWALLOWED: N/A

N/E means none established. N/A means not applicable. N/D means no data available.

# SECTION VII - REACTIVITY DATA HAZARDOUS POLYMERIZATION: Will not occur. STABILITY: Stable. INCOMPATIBILITY: Iron may cause violent decomposition of hydrogen peroxide (52% by weight or greater) SECTION VIII - SPILL OR LEAK PROCEDURES STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: If damaged, return castings to vendor or send to scrap reclaimer. Collected dust from machining, welding, etc. may be classed as a "hazardous waste" depending on circumstances. Consult local authorities regarding disposal. SECTION IX - PROTECTIVE EQUIPMENT TO BE USED RESPIRATORY PROTECTION: Wear a NIOSH approved respirator for dusts or fume if concentrations exceed the TLV's. VENTILATION: Provide general ventilation and/or local exhaust if necessary to maintain concentrations below the TLVs. PROTECTIVE GLOVES: Work gloves advisable for handling castings. EYE PROTECTION: Safety glasses with side shields and/or face shields for particles (grinding). Welding goggles or helmet for welding. OTHER PROTECTIVE EQUIPMENT: Wear a protective apron and gauntlets if arc-air gouging or cutting, or welding on

If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: No special precautions.

Als;

THE INFORMATION PRESENTED HERE HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE RELIABLE AND IS ACCURATE AND RELIABLE TO THE BEST OF OUR KNOWLEDGE AND BELIEF BUT IS NOT GUARANTEED TO BE SO.

N/E means none established. N/A means not applicable. N/D means no data available.

----- MATERIAL SAFETY DATA SHEET -----DATE PREPARED: SUPERCEDES: 3-17-88 ----- Manufacturer : ChemRex Inc. NAME EMERGENCY PHONE NUMBER ADDRESS: 6120 East 58th Avenue DAY: (303) -289-5651 ADDRESS: Commerce City , CO NIGHT: CHEMTREC (800) -424-9300 ADDRESS: ZIPCODE: 80022 INFORMATION PHONE NUMBER (303) -289-5286 ----- Section I - Product -----H M I S Hazard Codes Health: 2 Moderate NAME : FIXMASTER Black Silicone Adhesive Sealant Flammability: 1 Slight CLASS : Sealant US KIT NUMBER: 09-9836 Reactivity: 0 Minimal CANADA KIT NO: 70-9836 Personal Protective Equipment: B ---- Ingredient ---- | Percent | C. A. S. | LEL | Vapor Pressure
Material Description | by weight | Registry No. | | mm Hg @ 20 C Material Description Acetic Acid (released during cure) 3.5max. 64-19-7 5. 11.4 Boiling Range: N/A - N/A deg F Freezing Point: N/A deg F Vapor Pressure: 11.4 mm @ 20 deg C Vapor Density: Heavier than air Specific Gravity: 1.04 H2O Soluble: Slight (0.1-1.0%) Evaporation Rate: Slower & Volatile by Volume: < 5 % (relative to n-butyl acetate) Appearance and Odor: Smooth paste with vinegar odor ----- Section IV - Fire and Explosion Hazard Data --LEL UEL (%V in air) 5.4 16.0 Flash point: 300.0 deg F (Method Used) Tag Explosive Limits: FLAMMABILITY CLASSIFICATION OSHA: Combustible Liquid - Class IIIB DOT : Not regulated EXTINGUISHING MEDIA: Foam, CO2, Dry Chemical SPECIAL FIRE FIGHTING PROCEDURES: Wear self-contained breathing apparatus and protective clothing. Use water to cool exposed containers. Water stream directed into fire may cause frothing with subsequent spread of fire. UNUSUAL FIRE AND EXPLOSION HAZARDS: Irritating and/or toxic gases or fumes may be generated by thermal decomposition or combustion. Closed containers may rupture or explode (due to pressure build-up) when exposed to extreme heat. ---------- Section V - Toxicological Information ------| LD50 (mg/kg) | LC50 (ppm) ---- Ingredient ---- | PEL | TLV (twa) | (rat) | (rat) | Material Description | ppm | mg/m3| ppm | ORAL | DERMAL| INHAL 10. N/A 10.0 3310.0 1060.0 N/A Acetic Acid ------ Section VI - Health Hazard Data --THRESHOLD LIMIT VALUES: See Section V EFFECTS OF OVEREXPOSURE: ACUTE OVEREXPOSURE INFORMATION EYES: Severe irritant. May cause permanent corneal injury. SKIN: Moderate irritant. May cause redness and dermatitus. INHALATION: May cause irritation of respiratory tract. Overexposure may cause headache, nausea, and vomitting. Material aspirated into lungs may cause chemical pneumonitis. INGESTION: May cause irritation of mouth, throat, and stomach. Symptoms include nausea, abdominal pain and possible collapse.
\*Preexisting pulmonary and dermatological dysfunctions may be aggravated by exposure to hazardous components.

INGESTION: May cause irritation of mouth, throat, and stomach. Symptoms include nausea, abdominal pain and possible collapse. \*Preexisting pulmonary and dermatological dysfunctions may be aggravated by exposure to hazardous components. EMERGENCY AND FIRST AID PROCEDURES: EYES: Flush with plenty of water at least 15 minutes. Obtain immediate medical attention. Remove contaminated clothing. Wash affected area(s) thoroughly SKIN: with soap and water. Consult a physician. INHALATION: Remove to fresh air. If breathing is difficult, give oxygen. Administer artificial respiration if not breathing. Obtain medical attention. INGESTION: DO NOT INDUCE VOMITTING. Give water or milk if victim is conscious and not drowsy. Should vomitting occur, be sure to keep victim's head below hips to avoid aspiration of vomitus into the lungs. Obtain immediate medical attention. Section VII - Reactivity Data STABILITY: Stable STABILITY CONDITIONS TO AVOID: Contamination with moisture INCOMPATABILITY (MATERIALS TO AVOID CONTACT WITH): Not Applicable HAZARDOUS DECOMPOSITION PRODUCTS: Acrid fumes. Oxides of carbon. HAZARDOUS POLYMERIZATION: Will not occur POLYMERIZATION CONDITIONS TO AVOID: Not Applicable ======= Section VIII - Spill or Leak Procedures = STEPS FOR MATERIAL SPILLAGE: Ventilate area. Wear appropriate protective equipment. Absorb with inert material. Sweep into containers with lids. Cover loosely and remove to appropriate waste area. Wash spill area with soap and water. WASTE DISPOSAL METHODS: Review all local, state, and federal regulations concerning health and pollution for appropriate disposal procedures. Section IX - Special Protection Information == RESPIRATORY PROTECTION: If the TLV is exceeded, if use is performed in a poorly ventilated confined space or area with limited ventilation, use NIOSH-approved respirator in accordance with 29 CFR 1910.134. **VENTILATION:** Local exhaust as needed to control vapor/dust levels to below recommended limits. PROTECTIVE GLOVES: Impervious rubber. EYE PROTECTION:

Chemical safety goggles

OTHER PROTECTIVE EQUIPMENT: Clean protective clothing

HANDLING AND STORAGE PRECAUTIONS: FOR PROFESSIONAL USE ONLY

DO NOT TAKE INTERNALLY
AVOID CONTACT WITH EYES, SKIN, AND CLOTHING
AVOID BREATHING VAPOR
USE ONLY WITH ADEQUATE VENTILATION

KEEP OUT OF REACH OF CHILDREN

#### OTHER INFORMATION:

\*N/A = Information or data Not Available\*\*\*

\*\*NTP = National Toxicology Program

\*\*IARC = International Agency for Research on Cancer

- \*\*ACGIH = American Conference of Governmental Industrial Hygienists
- \*\*OSHA = Occupational Safety and Health Administration \*\*\*PEL = Permissable Exposure Limit (8-hr. TWA) (OSHA)
- \*\*\*TLV = Threshold Limit Value (8-hr. TWA) (ACGIH)

# 

#### TRANSPORTATION

DOT ΠN HAZARD CLASS: Not Regulated UN/NA NUMBER: Not Regulated Not Regulated Not Regulated SHIPPING NAME: Not Regulated Not Regulated CLASS NUMBER: Not Regulated SUBSID. RISK: Not Applicable Not Regulated Not Applicable PACKING GROUP: Not Applicable Not Applicable

CERCIA REPORTABLE QUANTITY: As product: none As Was SARA TITLE III EMERGENCY RESPONSE REPORTABLE QUANTITY: none CERCLA REPORTABLE QUANTITY: As Waste: none

SARA TITLE III INVENTORY REPORTING (Y/N): y

SARA TITLE III HAZARD CLASS(ES): acute health hazard COMPONENTS ON TSCA INVENTORY (Y/N): y

#### DISPOSAL

EPA RCRA WASTE CLASS: Not Regulated EPA RCRA WASTE NUMBER: Not Regulated

CALIFORNIA LIST LAND BAN (Y/N): Not Applicable

This information is furnished without warranty, representation, or license of any kind, except that this information is accurate to the best of Rexnord's knowledge, or is obtained from sources belived by Rexnord to be accurate. No warranty is expressed or implied regarding the accuracy of this information or the results to be obtained from its use thereof. Rexnord assumes no responsibility for injuries proximately caused by use of the Material if reasonable safety procedures are not followed as stipulated in this Data Sheet. Additionally, Rexnord assumes no responsibility for injuries proximately caused by abnormal use of the Material even if reasonable safety procedures are followed. Buyer assumes the risk in its use of the Material.

#### MATERIAL SAFETY DATA SHEET

# FOR COATINGS , RESINS AND RELATED MATERIALS

DATE OF PREPARATION- 5/16/89 PAGE 1 IANUFACTURER'S NAME : RODDA PAINT COMPANY DDRESS : DDRESS -6932 S.W. MACADAM AVENUE HTY,STATE : FORTLAND, OREGON 97219 MERGENCY TELEPHONE NO: DAY: (503) 244-7512 NIGHT: (503) 645-5642 NFORMATION TELEPHONE NO. DAY: (503) 244-7512 NIGHT: (503) 645-5642 SECTION I -- PRODUCT IDENTIFICATION ANUFACTURER'S CODE IDENTIFICATION: 737 -RODUCT CLASS: POLYURETHANE MODIFIED ALKYD ENAMEL RADE NAME: FAST DRY FLOOR FINISH - LIGHT GRAY MIS INFORMATION \*\* HEALTH- 2 FLAMMABILITY- 2 REACTIVITY- O PERSONAL PROTECTIVE EQUIPMENT- H SECTION II HAZARDOUS INGREDIENTS THE MATERIALS IN THIS PRODUCT HAVE NOT BEEN LISTED BY NTP, IARC, OR OSHA AS CARCINOGENIC.

A RIAL DESCRIPTION	CAS#		ţ		BY IGHT		TLV PPM	(TWA) MG/M3	L.E.L.	PRE	FOR SSURE @68DF
INTING COLORANT		1	.5		5	l	50.001	125.00	3.2	? }	.08
LKYD RESIN SOLUTION		1	35	****	50	ł	100.001	525.001	1.00	)	٠10
IONTMORILLONITE	171011-26-2	1	.5		5	11	YOT ESTI	5.001	1444 1777 9977 4977 7997 198	}	**** **** **** ****
SUTILE TITANIUM DIOXIDE	113463-67-7		15		20	1	YOT EST!	10.001	600	]	
ARTUM SULFATE	17727-43-7	1	ij	****	10	[ ]	NOT ESTI	13.00}	1223 1242 1220 1220 <del>122</del> 0 1221	}	100141414001100400
LUMINUM SILICATE	11332-58-7		.5		5	11	YOT EST!	10.001		1	1004 1001 1000 1000 1100
LIPHATIC HYDROCARBON	*64742-88-7	1	5	-,	10	1	125,001	NOT EST	1.4	)	.10
ETHYL ALCOHOL	*67-56-1	}		<	.5		200.001	260.001	7+3	<b>S</b>	97.00
DIL MOD. POLYURETHANE	1	1	15		20		125.001	NOT EST	1 0	) }	, 1O

--- THIS PRODUCT CONTAINS PIGMENTS WHICH MAY BECOME A DUST NUISANCE WHEN REMOVED BY ABRASIVE BLASTING, SANDING OR GRINDING.

#### SECTION III PHYSICAL DATA

HIGH 383.0 BOILING RANGE LOW 148.1

VAPOR PRESSURE VAPOR DENSITY 97.00

HEAVIER THAN AIR

FASTER THAN BUTYL ACETATE

EVAPORATION RATE WEIGHT PER GALLON 9.90 % VOLATILE BY VOLUME % VOLATILE BY WEIGHT 55.59 37 + 23

APPEARANCE-ODOR- GRAY LIQUID

# SECTION IV -- FIRE AND EXPLOSION HAZARD DATA

LAMMABILITY CLASSIFICATION OSHA-CLASS IB - DOT- FLAMMABLE LIQUID OWEST FLASHPOINT T:C:C: 54:0 LOWER EXPLOSION LEVEL (LEL) 1:0

XTINGUISHING MEDIA: (Yes)-FOAM (Yes)-ALCOHOL FOAM (Yes)-CO2 (Yes)-DRY CHEMICAL (Yes)-WATER FOG (N/A)-OTHER Lanket fire with one of the above extinguishing media. NUSAL FIRE AND EXPLOSION HAZARDS: Vapors are heavier than air and may ravel along the ground or be moved by ventilation and ignited by heat, t lights, other flames and ignition sources at locations distant from aterial handling point. Never use welding or cutting torch on or near drum even empty) because product (just residue) can ignite EXPLOSIVELY! PECIAL FIRE FIGHTING PROCEDURES: For fires involving this material, do not inter any enclosed or confined fire space without proper protective equipment. Self-contained breathing apparatus with a full facepiece operated in ressure-demand or other positive pressure mode to protect against the azardous effects of normal products of combustion or oxygen deficiency.

#### SECTION V -- HEALTH HAZARD DATA

FFECTS OF OVEREXPOSURE: FOR PRODUCT-EYES: Can cause irritation, redness, earing, blurred vision. SKIN: Prolonged or repeated contact can cause moder te irritation, defatting, dermatitis.

RIMARY ROUTE(S) OF ENTRY:(Yes)-DERMAL (Yes)-INHALATION (Yes)-INGESTION REATHING: Excessive breathing of vapors can cause masal and respiratory rritation, dizziness, weakness, fatigue, nausea, headache, possible unconciousness, and even asphyxiation. SWALLOWING: Can cause gastrointestinal rritation, nausea, vomiting, and diarrhea. Aspiration of material into ungs can cause chemical pheumonitis which can be fatal.

MERGENCY & FIRST AID PROCEDURES: SKIN- Wash exposed area with soap & water YES-flush with large amounts of water. INGESTION- Do not induce vomitinget medical attention! INHALATION-If affected, remove to fresh air. If reathing is difficult. administer oxygen. If breathing has stopped, give rtificial respiration. Get medical attention.

METICAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE: None known.

SECTION VI -- REACTIVITY DATA



Thirt: ( )-UNSTABLE (Yes)-STABLE

AZARDOUS POLYMERIZATION ( )-MAY OCCUR (XXX)- WILL NOT OCCUR

AZARDOUS DECOMPOSITION PRODUCTS- Normal combustion forms carbon dioxide & ater vapor; incomplete combustion can produce carbon monoxide.

ONDITIONS TO AVOID-Excessive temperatures.

NCOMPATIBILITY (MATERIALS TO AVOID)- Strong oxidizing agents (Nitric Acid, ermanganates, MEK Peroxide, Etc.)

#### SECTION VII SPILL OR LEAK PROCEDURES

TEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Eliminate all gnition sources (flares, flames including pilot lights & electrical parks). Persons not wearing protective equipment should be excluded from rea of spill until clean-up has been completed. Stop spill at source, dike rea of spill to prevent spreading, pump liquid to salvage tank. Remaining iquid may be taken up on sand, clay, earth, floor absorbent, or other absorbent material and shoveled into containers. Frevent run-off to sewers, treams, or other bodies of water.

ASTE DISPOSAL METHOD— Destroy by liquid incineration. Material collected n absorbent material may be deposited in an approved toxic substance and fill in accordance with local, state, and federal regulations.

## SECTION VIII-- SAFE HANDLING AND USE INFORMATION

ESPIRATORY PROTECTION: If TLV of the product or any component is exceeded, I DSH/MESA jointly approved self-contained breathing apparatus with a utt face piece operated in pressure demand or other positive pressure mode s advised; however, OSHA regulations also permit other NIOSH/MESA respirtors under specified conditions. (See your safety equipment supplier). ENTILATION: Provide sufficient mechanical and/or local exhaust to maintain exposure below TLV(s).

YE PROTECTION: Chemical splash goggles in compliance with OSHA regulations re-advised.

ROTECTIVE GLOVES: Wear resistant gloves such as:, BUNA-N.

THER PROTECTIVE EQUIPMENT: To prevent repeated or protonged skin contact, wear impervious clothing and boots.

MGENIC PRACTICES: Wash hands before eating or using washroom.

#### SECTION IX-- SPECIAL PRECAUTIONS

RECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in a cool, dry area. leep away from heat, sparks, and open flame. Keep containers closed when not in use. Use only with adequate ventilation.

ITHER PRECAUTIONS: Containers of this material may be hazardous when amptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in this data sheet must be been ved.

TEAD AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL!

TO 915032892272

Material Safety Data Shee	H .		U.S. Department of La		
Any he used to comply with ISHA's Hazard Communication St	landard '		Occupational Safety and Health (Non-Mandatory Form)	, vaminititition	<b>N//</b>
9 CFR 1910-1200. Standard must	4 be	•	Form Approved		•
anaulted for specific requirements		15	OMB No. 1218-0072	No: 780	l 
EMTITY (As Used on Label and Lac) LED-PLATE NO. 250 - H	EETS HIL-	A-9:37	Mosi: Blank spaces are not permitte information is available, the sp	d if any sens is not app and market to market to	Acadelle franc
ection (	21		,		angelege of a service door to a great
e-wlectyrer's Maying	, , , , , , , , , , , , , , , , , , ,	. ۵۰ میبیوسید، از انتقال	Emergency Telephone Number		and professional states of the
ARMITE LABORATOR			21	3/587-7744	
ichops (Apricial, Sprint, Cay, Sprint, A			Telephone Number for Information		
1865 RANDOLPH ST	REET		Date Prepared	3/587-7744	<del>- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1</del>
LOS ANGELES, CA	90001		JUNE 25. 1	.989` ,	_
	<u> </u>		Signature of Preparer (gotional)		A Land of the Control
······································		-	J YF+ Cum	marin.	
ection II — Hezerdous Ingre	rdienie/iden	tity information	n /		,
electous Components (Spenic Cha	micul launhly; C	Commen Name(ii))	OSHA PEL ACGIH TLV	Other Limits Recommunicied	<b>%</b> (upaon
VEHICLE - PARAFINE	BASK				
	OIL SAE			•	<del></del>
	\$ -ATT HENT				
1 12					
OTHERS - PETROLEUM	GREASE				
			·····		<u> </u>
BASE METAL - METALL)	C LEAD PO	WDER	0.50 Ug/M <sup>3</sup> 0.15 Mg/	M3	70%
The both of the city		1)		11.	र कि∷किर ।
	£19,33-34-	عدرون محموم بيسيهامك			
			-		
,					
<del></del>		***************************************	The second section of the second section of the second section of the second section of the second section of the second section secti		
					·
•					
Section III — Physical/Chemi	ical Charact	teristics			
Justing Point			Specific Gravity (H2O = 1)	- Albert	and the second
	MIN	300°F			N/A
Japan Pressure (mm Hg.)			Melling Pour		
			11 C	- <u></u>	620°F
Attain Chirally (AIR = 1)		1 5.74	Eviporalent (tato (Uniyi Acetato - 1)		N/A
induction in Maler			Transcript - 11	ن <u>رز پر ۱</u> ۱ <u></u>	T-470
INSOLUBLI	K				
Appearance and Odor	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
DARK CRAY	- NONE			. <del> </del>	
Section IV — Fire and Explo	işlən Hazard	d Data			
wen from (Method Used)			Flammable Limits	LEL	UEI.
404°F	(207°F)	COU	.,	\_N/A1	N/A
stinguishing Medic		of the same of the same of the same of the same of the same of the same of the same of the same of the same of	•		
FOAM CO-	DKY_L	HENTCH	و المعالم المعالم المعالم المعالم المعالم المعالم المعالم المعالم المعالم المعالم المعالم المعالم المعالم المع المعالم المعالم	— <u>———————————————————————————————————</u>	
	NONE	AS GREASE P	CODUCT	د به در المراجعة المراجعة المراجعة المراجعة المراجعة المراجعة المراجعة المراجعة المراجعة المراجعة المراجعة الم	
			e gage e e e e e e e e e e e e e e e e e		
Chievalit (Heading & Dan and Burums)  A. T. M. I.		ማሳ <b>ም</b> ይካያነው ልድም	. WITH MAJOR FIRE - P	TIMES MAY SEE THE	ne orne
	war King	TAY GIAMA	e dame danger ator a	THE TALL DE LEG	wint.
				¥	
	<del></del>		e and the second		

Jan. 7 92 10:32 0000 ARMITE LABORATORIES

N. a. alaka	- Reactivity Out	#						भारता के स्वयं के स्वयं का का किया है। 
SHAMIY	Uranable	1.	Conditions to A		NC AVIDENCIA	E CAN DA	USE LEAD TO RE	
	Stable	×			RATE HYDROGI		OND LEAD IN NE	DET DOM
ncompetibility	Meleripia ID Avoid	<u> </u>	<u></u>		***************************************	473.		······································
lazaldona Deco	Imposisson ur Byprod	N/						
AT TEMPE	RATURES ABOV	E THE			EAD FUMES M	AY BE EN	VCLVED.	
Allumanshine Artificans	May Occur		Conditions to A	N/A				
	Will Mat Goom	X						
jection VI -	- Heelth Huzari	d Date		· · · · · · · · · · · · · · · · · · ·		·	. , ,	grand and companies of the company o
touse(s) at Entr	y: (n)	www.			Eiriji? N/A		Incretion?	
(July) Hazarda		N/A						
EAD: CH	HUNIC UNEREX	PCSUR!	e to high	<u>praei's c</u>	F AIRBORNE	DR INGES	TED LEAD MAY'R	<u>ESULT IN ANEM</u>
							LANGED OVEREXA	
			ntestinal			·	THIS MATERIAL	1
Sincrandmiscrit	NONE Ú	ips			IARC Monography?	•	OSHA Regulate	d?
	*				· • • • • • • • • • • • • • • • • • • •			
-	herate of Exhances	A ('11)T	E CIPTATIO	א עואני א	S ABOVE.	***************************************	4	<u>سیسه و ۱۰۰ و یو توپنداشته شد مستندسته د</u>
		<u> </u>	e Stroin	19 <u>1944-4 - 4</u> 7	il wise ver			*****
Medical Constant Consumally Appro	named the Extrogram	N/_	Δ		·			مشاد در او وی و در است
				••				
				•				
Emergency and	First Aid Procedure	NS						
EYES: AS	GREASE PROD	UCT.					WASH WELL WITH	SOAP & WATER
EYES: AS INHALED:	GREASE PROD N/A SW	UCT. ALLOW	ED: DO NO	T INDUCT	REMOVE BY I		17	SOAP & WATER
EYES: AS INHALED: Section VII	OREASE PROD N/A 5W - Precentions	UCT. ALLOW for Sa	ED: DO NO	T INDUCT			17	SOAP & WATER
EYES: AS INHALED: Section VII	ORFASE PROD  N/A SW  — Precautions  Am in Case Malers	ALLOW for Sa	ED: DO NO	T INDUCT			17	SOAP & WATER
EYES: AS INIALED: Section VII	CREASE PROD N/A SW — Precautions Ann in Case Malera VIPE AS CRE	OCT. ALLOW  for Sa th Heli ASE	ED: DO NO te Handling and or Spilled	T INDUCT			17	SOAP & WATER
EYES: AS INIALED: Section VII	ORFASE PROD  N/A SW  — Precautions  Am in Case Malers	OCT. ALLOW  for Sa th Heli ASE	ED: DO NO te Handling and or Spilled	T INDUCT			17	SCAP & WATER
EYES: AS INHALED: Section VII Unps to be Th	CREASE PROD  N/A SW  — Processions  Ann in Case Males  VIPE AS GRE  TAKE UP WIT	OCT. ALLOW  for Sa th Heli ASE	ED: DO NO te Handling and or Spilled	T INDUCT			17	SCAP & WATER
EYES: AS INHALED: Section VII Supe to be th	CREASE PROD N/A SW — Precautions Ann in Case Malers VIPE AS GRE TAKE UP WIT	ICT. ALLOW for Sa In Hele ASE	ED: DO NO fe Handling: used or Spilled Y, PUNITCE,	T INDUCT	VOMITING,	CALL PHY	17	
EYES: AS INIALED: Section VII	CREASE PROD N/A 5W — Procoulions Ann in Case Malers VIPE AS GRE TAKE UP VIII	ALLOW for Sa in Hele ASE II CLA	ED: DO NO  te Handling  www or Spilled  Y, PUNITCE,  HANTITY, R	T INDUCT	VOMITING,	SING TO	SICIAN,	
EYES: AS INHALED: Section VII Section VII Wasie Displayed	CREASE PROD N/A 5W — Procoulions Ann in Case Malers VIPE AS GRE TAKE UP VIII	ALLOW for Sa in Hele ASE II CLA IRGE Q	ED: DO NO	T INDUCT	OR RE-PROCES	SING TO	DISTRIBUTOR OF	SMELTER.
EYES: AS INHALED: Section VII Unpe to be The Weste Chapman	CREASE PROD N/A SW — Precautions Ann in Case Malers WIPE AS GRE TAKE DP WIT  ANY LA OTHERS By Taken in Handle	HCT. ALLOW  for Sale in Helica ASE  H CLA  RGE () ITSE C	ED: DO NO  fe Handling:  Lind or Spilled  Y, PUNTCE,  UANTITY, R  CNSULT LOC  iteming	T INDUCTOR INTO THE PROPERTY OF THE PROPERTY O	R RE-PROCES	SING TO	DISTRIBUTOR OF	SMELTER.
EYES: AS INHALED: Section VII Unpe to be The Weste Chapman	CREASE PROD N/A SW — Precautions Ann in Coop Majoria VIPE AS GRE TAKE UP WIT ANY IA OTHERM By Taken in Minish	ALLOW for Sa in Hele ASE II CLA IRGE Q	ED: DO NO  fe Handling:  Lind or Spilled  Y, PUNTCE,  UANTITY, R  CNSULT LOC  iteming	T INDUCT	R RE-PROCES	SING TO	DISTRIBUTOR OF	SMELTER.
EYES: AS INHALED: Section VII Unipe to be The Whole Dispuse Precautions to	CREASE PROD N/A 5W — Procoulions Ann in Case Malers VIPE AS GRE TAKE UP WIT Annihou ANY IA OTHERS By Taken in Handle	HCT. ALLOW  for Sale in Helica ASE  H CLA  RGE () ITSE C	ED: DO NO  fe Handling:  Lind or Spilled  Y, PUNTCE,  UANTITY, R  CNSULT LOC  iteming	T INDUCTOR INTO THE PROPERTY OF THE PROPERTY O	R RE-PROCES	SING TO	DISTRIBUTOR OF CHEMICALS KNOOF CALIFORNIA TO A) CAUSE CANCE	SMELTER.  NTAINS A CHEMICA OWN TO THE STAT
EYES: AS INHALED: Section VII Supe to be Ta Weste Dispasse Preceditions to	CREASE PROD N/A SW — Precautions Ann in Case Malers VIPE AS GRE TAKE UP WIT ANY LA OTHERS By Taken in Maidle NC	HCT. ALLOW  OF Sale in Hele ASE H CLA  RGE () ISE C	ED: DO NO  fe Handling  word or Spring  Y, PUNITCE,  HANTITY, R  ONSULT LOC  auting  — PREPER	T INDUCTOR INTO THE PROPERTY OF THE PROPERTY O	R RE-PROCES	SING TO	THIS PRODUCT CON OR CHEMICALS KNO OF CALIFORNIA TO A) CAUSE CANCI OR	SMELTER.  VITAINS A CHEMICA OWN TO THE STAT O; ER
YES: AS INHALED: Section VII Sleps to the Ta Waste Dispuse Precautous to Ultimi Precauto Section VII	CREASE PROD N/A SW — Precautions Ann in Com Maining WIPE AS GRE TAKE BP WIT ANY LA OTHERM By Taken in Handle NC N/A	HCT. ALLOW  OF Sale in Hotel ASE  H CLA  RIGE () ITSE C  HHMAL.	ED: DO NO  fe Handling  word or Spring  Y, PUNITCE,  HANTITY, R  ONSULT LOC  auting  — PREPER	T INDUCTOR INTO THE PROPERTY OF THE PROPERTY O	R RE-PROCES	SING TO	THIS PRODUCT CON OR CHEMICALS KNI OF CALIFORNIA TO A) CAUSE CANCI OR B) CAUSE BIRTHI REPRODUCTIV	SMELTER.  VITAINS A CHEMICA OWN TO THE STAT O: ER DEFECTS OR OTHE VE HARM.
EYES: AS INHALED: Section VII Slope to the Ta Waste Dispuse Precautors to Ultimi Precauto Section VII	CREASE PROD N/A SW — Precautions Ann in Case Malers VIPE AS GRE TAKE UP WIT ANY LA OTHERS By Taken in Maidle NC	HCT. ALLOW  OF Sale in Hotel ASE  H CLA  RIGE () ITSE C  HHMAL.	ED: DO NO  fe Handling  word or Spring  Y, PUNITCE,  HANTITY, R  ONSULT LOC  auting  — PREPER	T INDUCTOR INTO THE PROPERTY OF THE PROPERTY O	PR RE-PROCES  PSAL PEOPLE  1250 F	SING TO	THIS PRODUCT CON OR CHEMICALS KNI OF CALIFORNIA TO A) CAUSE CANCI OR B) CAUSE BIRTHI REPRODUCTIV	SMELTER.  VITAINS A CHEMICA OWN TO THE STAT O; ER  DEFECTS OR OTHE
EYES: AS INHALED: Section VII Slope to the Ta Waste Dispuse Precautors to Ultimi Precauto Section VII	CREASE PROD N/A SW — Precautions Ann in Com Maining WIPE AS GRE TAKE BP WIT ANY LA OTHERM By Taken in Handle NC N/A	HCT. ALLOW  OF Sale in Hotel ASE  H CLA  RIGE () ITSE C  ORMAL.	ED: DO NO  fe Handling  word or Spilled  Y, PUNITCE,  HANTITY, R  ONSULT LOC  sound  PREPER	T INDUCTOR INTO THE PROPERTY OF THE PROPERTY O	R RE-PROCES	SING TO	THIS PRODUCT CON OR CHEMICALS KNI OF CALIFORNIA TO A) CAUSE CANCI OR B) CAUSE BIRTHI REPRODUCTIV	SMELTER.  VITAINS A CHEMICA OWN TO THE STAT O: ER DEFECTS OR OTHE VE HARM.
EYES: AS INHALED: Section VII Section VII Waste Dispuse Precautors to United Precauto Section VII Heaptrajory Pre	CREASE PROD N/A SW — Precautions Ann in Case Maleria VIPE AS GRE TAKE BP VII  OTHERS By Taken in Handle NC N/A  I — Control Me Grecton (Specify Type	HCT. ALLOW  for Sa in Hote ASE H CLA  RGE () ISE C RHAL	ED: DO NO  19 Handling  Lind or Spaled  Y, PUNICE,  UANTITY, R  ONSULT LOC  LOCATION  PREPER  N/A  N/A	T INDUCTOR INTO THE PROPERTY OF THE PROPERTY O	PR RE-PROCES  PSAL PEOPLE  1250 F	SING TO	THIS PRODUCT COME OF CALIFORNIA TO OR CAUSE CANCE OR B. CAUSE BIRTHER REPRODUCTIVE (22 C)	SMELTER.  VITAINS A CHEMICA OWN TO THE STAT O: ER DEFECTS OR OTHE VE HARM.
EYES: AS INHALED: Section VII Section VII Waste Dispuse Precautors to United Precauto Section VII Heaptrajory Pre	CREASE PROD N/A SW — Processions — Processions Ann in Case Malaria VIPE AS GRE TAKE DP WIT  ANY IA OTHERM By Taken in Mandin NC STATE OF TAKE N/A  I — Control Man Unician (Special Take) Machiguesia (Car Machiguesia (Car	HCT. ALLOW  for Sa in Hote ASE H CLA  RGE () ISE C RHAL	ED: DO NO  19 Handling  Will or Spilled  Y, PUNITCE,  HANTITY, N  ONSULT LOC  BOUND  PREFER  N/A  N/A  N/A	T INDUCTOR INTO THE PROPERTY OF THE PROPERTY O	PRE-PROCES  PRAL PEOPLE  PROPER  Space	SING TO	THIS PRODUCT COMOR CHEMICALS KNIOF CALIFORNIA TO OR B) CAUSE SIRTHIN REPRODUCTIVE (22 C)	SMELTER.  VITAINS A CHEMICA OWN TO THE STAT O: ER DEFECTS OR OTHE VE HARM.
EYES: AS INHALED: Section VII Unpero be In Weste Dispuse Precautors to Catter Precauto Section VII Hespiratory Pre Ventilation	CREASE PROD N/A SW — Processions — Processions Ann in Case Malaria VIPE AS GRE TAKE DP WIT  ANY IA OTHERM By Taken in Mandin NC STATE OF TAKE N/A  I — Control Man Unician (Special Take) Machiguesia (Car Machiguesia (Car	ALLOW OF SALE OF CLA	ED: DO NO  19 Handling  Lind or Spaled  Y, PUNICE,  UANTITY, R  ONSULT LOC  LOCATION  PREPER  N/A  N/A	T INDUCTOR INTO THE PROPERTY OF THE PROPERTY O	PR RE-PROCES  ISAL PEOPLE  Space Ones	SING TO	THIS PRODUCT COME OF CALIFORNIA TO OR CAUSE CANCE OR B. CAUSE BIRTHER REPRODUCTIVE (22 C)	SMELTER.  VITAINS A CHEMICA OWN TO THE STAT O: ER DEFECTS OR OTHE VE HARM.

# McMASTER-CARR supply company

9630 NORWALK BLVD. SANTA FE SPRINGS, CA 90670-2932 PHONE: 310-695-2449 FAX: 310-695-2323 

# FACSIMILE TEANSMISSION

ATTENTION:	Howard	
COMPANY:	tish Those	Cessant
SUBJECT:	MSDS	
FROM:		DEPT: Sales
	NY PAGES RESENT, PL	EASE CONTACT ME AT EXTENSION:

FAX 290 SFS

# MATERIAL SAFETY DATA SHEET: SIMPLE GREEN®

SUNSHINE MAKER'S. INC.

RESEARCH AND DEVELOPMENT DIVISION 15922 Pacific Coast Highway

No. 1003

Huntington Harbour, CA 92649

Telephone: 800-228-0709

Version: 3/30/92

SUPERSEDES ANY PREVIOUS VERSION

Page 1 of 4

# PRODUCT IDENTIFICATION

Other Names:

Simple Green®

Simple Green® Industrial Cleaner and Degreaser

Use:

An all purpose cleaner and degreaser used undiluted or diluted in water for direct, spray, and dip tank procedures. Safely used on oil and petroleum spills as an emulsifier, dispersant, and beach and wildlife cleaner.

# Hazard Rating (NFPA):

Health = 1\*

Reactivity = 0

Fire = 0

Special = 0



### Rating Scale:

0 = minimal

1 = slight

2 = moderate

3 = serious

4 = severe

\*Mild eye irritant, non-mutagenic and non-carcinogenic.

# SAFE HANDLING INFORMATION

# Storage and Transport:

No special precautions are required. This product is non-hazardous for storage and transport according to the U.S. Department of Transportation Regulations.

Simple Green® requires no special labeling or placarding to meet U.S. Department of Transportation requirements.

# Spills and Disposal:

Spill or Leakage

Recover usable material by convenient method; residual may be removed by wipe or

Procedures:

wet mop.

Waste Disposal:

Simple Green® is fully water soluble and biodegradable and will not harm sewage-treatment

microorganisms if disposed by sewer or drain. Dispose of in accordance with all applicable

local, state, and federal laws.

#### Fire/Explosion Hazard:

Extinguishing Media: Nonflammable/nonexplosive. No special procedures required.

Special Fire Fighting

Procedures:

None required.

# Reactivity Data:

Nonreactive. Simple Green® is stable, even under fire conditions, and will not react with water, acids, or oxidizers.

SUNSHINE MAKERS, INC.

Simple Green

Page 2 5/4

# PRECAUTIONS FOR USE

Exposure Limits: None.

Ventilation:

No special ventilation is required during use.

Personal Protection

Precautionary Measures: No special requirements under normal use conditions.

Eye Protection:

Caution, including reasonable eye protection, should always be used to avoid eye

contact where splathing may occur.

Skin Protection:

No special precautions required; rinse completely from skin after contact.

Respiratory Protection:

No special precautions required.

Flammability:

Material is stable and will not burn.

### FIRST AID TREATMENT

Eye contact: Immediately rinse the eye with large quantities of cool water; continue 10-15 minutes or until the

material has been removed; be sure to remove contact lenses, if present, and to lift upper and

lower lids during rinsing. Get medical attention if irritation persists.

Skin contact: Minimal effects, if any; rinse skin with water, rinse shoes and launder clothing before reuse.

Reversible reddening may occur in some dermal-sensitive users; thoroughly rinse area and get

medical attention if reaction persists.

Swallowing:

Essentially non-toxic. Give several glasses of water to dilute; do not induce vomiting. If stomach

upset occurs, consult physician.

Inhalation:

Non-toxic. Exposures to concent ate-mist may cause mild irritation of nasal passages or throat;

remove to fresh air. Get medical attention if irritation persists.

#### INGREDIENT INFORMATION

Ingredient	CAS Number	tor Undiluted Materials OSHA PEL ACGIH TLV
Surfactants		None established
Wetting agents		None established
Buffers		None established
Butyt Cellosolve*	111-76-2	25 (skin) 25 (skin)
Fragrance		Nonhazardous
Color		Nonhazardous
Water		Nonhazardous

\*NOTE: Butyl Cellosolve is only one of the ravi material ingredients that undergo processing and dilution during the manufacture of Simple Green\*. Upon completion of the manufacturing process, Simple Green\* does not possess the occupational health risks associated with exposure to undiluted Butyl Cellosolve. Verification of this is contained in the independent test results detailed under "Toxicity Information" on Page 3 of this MSDS.

SUNSHINE MAKERS, INC.

Simple Green<sup>®</sup> Page 3 of 4

# TOXICITY INFORMATION

### **Human Health Effects**

Adverse effects on human health are not expected from Simple Green, based upon seventeen years of use without reported adverse health incidence in diverse population groups, including extensive use by inmates of U.S. Federal prisons in cleanup operations.

Simple Green<sup>4</sup> is a mild eye irritant; mucous membranes may become irritated by concentrate-mist.

Simple Green is not likely to irritate the skin in the majority of users. Repeated daily application to the skin without rinsing, or continuous contact of Simple Green on the skin may lead to temporary, but reversible. irritation.

The butyl cellosolve in Simple Green® is part of a chemical category (glycol ethers) regulated by the Emergency Planning and Community Right-to-Know /xxt (SARA, Title III, section 313). Based upon the concentration of butyl cellosolve in Simple Green, a reporting requirement exists when one facility or location has used or contains, in one year, a total of 162,400 gallons of Simple Green®.

# Nonhuman Toxicity

# Acute Mortality Studies:

Oral LD<sub>so</sub> (rat):

>5.0 g/kg body weight

Dermal LD<sub>so</sub> (rabbit): >2.0 g/kg body weight

Dermal Irritation; Only mild, but reversible, irritation was found in a standard 72-hr test on rabbits. A value of 0.2 (non-irritating) was found on scale of 8.

ve Irritation: With or without rinsing with water, the irritation scores in rabbits at 24 hours did not exceed 15 (mild imitant) on a scale of 110.

Subchronic dermat effects: No adverse effects, except reversible dermal initiation, were found in rabbits exposed to Simple Green (up to 2.0 g/kg/day for 13 weeks) applied to the skin of 25 males and 25 females. Only female body weight gain was affected. Detailed microscopic examination of all major tissues showed no adverse changes.

Fertility Assessment by Continuous Breeding: The Simple Green® formulation had no adverse effect on fertility and reproduction in CD-1 mice with continuous administration for 18 weeks, and had no adverse effect on the reproductive performance of their offspring.

#### BIODEGRADABILITY AND ENVIRONMENTAL TOXICITY INFORMATION

# Blodegradability:

Simple Green® is readily decomposed by naturally occurring microorganisms: The biological oxygen demand (BOD), as a percentage of the chemical oxygen demand (COD), after 4, 7, and 11 days was 56%, 60%, and 70%, respectively.

In a standard biodegradation, test with soils from three different countries, butyl cellosolve reached 50% degradation in six to 23 days, depending upon soil type, and exceeded the rate of degradation for glucose which was used as a control for comparison.

### Environmental Toxicity Information:

Simple Green® is nontoxic to any of the following marine and estuarine test animals at concentrations below 200 mg/L (0.02%). The Simple Green® concentrations that are likely to be lethal to 50% of the exposed organisms are summarized in the following table.

SUNSHINE MAKERS, INC.

Simple Green Page 4 cf 4

	, LC <sub>so</sub> in n	NO:3449	
	48-hour	96-hour	
Marine Fish:			
Mud minnow (Fundulus heteroclitus)	1590	1574	
Whitebait (Galaxias maculatus)	210	210	
Marine/Estuarine Invertebrates:			
Brine Shrimp (Artemia salina)	610	399́	
Grass Shrimp (Palaemonetes pugio)	270	220	•
Green-lipped Mussel (Pema canaliculus)	220	220	
Mud Snail (Potamopyrgus estuarinus)	410	350	

#### Chemicals of Environmental Concern:

Based upon chemical analysis, Simple Green\* contains no known EPA priority pollutants, heavy metals, or chemicals listed under TSCA, RCRA, CERCLA, or CWA, Analysis by TCLP (Toxicity Characteristic Leaching Procedure) according to RCRA revealed no toxic organic or inorganic constituents.

### OTHER INFORMATION

# Physical/Chemical Data

Ash Content:

At 600 °F: 1.86% by weight.

Nutrient Content: Nitrogen: <1.0% by weight (jusion and qualitative test for ammonia).

Phosphorus: 0.3% by formula.

Sulfur: 0.6% by weight (barium chloride precipitation method).

VOC:

7.96 g/E volatile organic compounds (by ASTM methods).

# Physical Description and Properties

Appearance/odor: Transparent green liquid with characteristic odor.

Freezing Point: -9 °C (16 °F)

Vapor Pressure: 30 mm Hg @ 38 °C (100 °F)

Boiling Point: 110 °C (231 °F)

Vapor Dens ty: 1.3 (air = 1)

Specific Gravity: 1.0257

pH: 9.5

Solubility in Water: Completely soluble in water.

The higher salt concentrations in marine ecosystems will lead to complexes with Simple Greeh® that may become visible at ratios above one part Simple Green® to 99 parts seawater.

#### General Information

Containers:

Simple Green® residues can be completely removed by rinsing with water; the container may

be recycled or applied to other uses.

#### Electrical Wiring

Compatibility: Polylmide insulated wiring is not affected by exposure to Simple Green. After immersion in Simple Green® for 14 days at 74°F, the 61 cm piece of polyimide insulated wire passed a one minute dielectric proof test at 2500 volts (ASTM D-149).

#### \*\*\* NOTICE \*\*\*

All information appearing herein is based upon data obtained by the manufacturer and recognized technical sources. Judgements as to the suitability of information herein for purchaser's purposes are necessarily purchaser's responsibility. Therefore, although reasonable care has been taken in the preparation of this information. Sunshine Makers, the, or its distributors extends no warranties, makes no representations and assumes no responsibility as to the suitability of such intermation for application to purchaser's intended purposes or for consequences of its use.

FAX 290 SFS

10 915032892272

P.01/05

# McMASTER-CARR Supply company

9630 NORWALK BLVD. BANTA FE SPRINGS, CA 90670-2932 HONE: 310-695-2449 FAX: 310-695-2323 DATE 3-10
PAGE 1 OF 5
FAX#: 503-289-2272

FACSIMILE TRANSMISSION

HIENTION:	Howard
OMPANY:	Ash Trave Coment
UBJECT:	ms05
FROM:	DEPT: Sakos

894-10206



### NOTICE

This product does not require a Material Safety Data Sheet because it is a cosmetic product intended for the personal consumption of employees while in the workplace. As such, OSHA regulations specifically exempt it from all requirements of the Hazard Communication Standard.

However, we recognize that compliance with the Hazard Communication Standard and assuring the safety of the customer's employees is of the greatest concern to our customers, and that some customers seek to go beyond what is legally required. Therefore this data sheet is provided in the interest of assuring that our customers are kept fully informed about our products and are able to fully communicate the proper procedures for the use of these products to their employees. In this spirit, we have included information about all major components defined as hazardous by OSHA (29 CFR Sec. 1910.1200) in the section marked "Hazardous Ingredients".

Form #409937

### MATERIAL SAFETY DATA SHEET

Page 2 of 4

# Sani-Fresh® Super Duty Cleanser

May be used to comply with OSHA's Hazard Communication Standard, 29CFR1910.1200. Standard must be consulted for specific requirements.

#### SECTION 1

Date Prepared:

June 27, 1989

Manufacturers Name:

Sani-Fresh International

A Unit of the Commercial Division

Scott Worldwide, Scott Paper Company

Address: 4702 Goldfield

City, State, and Zip:

San Antonio, Texas 78218

Emergency Telephone No.: (512) 661-5374

Signature of Person Responsible For Preparation (Optional): \_

### SECTION 2 HAZARDOUS INGREDIENTS/IDENTITY

Hazardous Component(s)	OSHA	ACGIH	Exposure	8	CAS
	PEL	TLV	Limits	-	No.
Cocamphodiacetate	NE	NE	NE	<10	68650-39-5
Linoleamide DEA	NE	NE	NE	<10	56863-02-6
Dipentene	NE	NE	NE	<10	138-86-3
Nonoxynol-9	NE	NE	NE	<10	9016-45-9
Non-hazardous ingredients	NA	NA	NA	Bal.	

Unidentified ingredients are not considered hazardous under the Federal Hazard Communication Standard (29 CFR 1910.1200).

#### SECTION 3 PHYSICAL & CHEMICAL CHARACTERISTICS

Boiling Point Specific Gravity (H20=1) 0.974 Vapor Pressure (mm Hg) NE Vapor Density (Air = 1) Solubility in Water NE

Appreciable

Appearance and Odor Green Viscous Liquid: Citrus Odor

7.5 to 8.5 Нq

Percent Volatile by Volume (minus water) <10 Evaporation Rate (BuAc=1) <1

# SECTION 4 FIRE AND EXPLOSION DATA

Flash Point

Method Used

None C.O.C. ASTM-D92

Flammable Limits in Air % By Volume

LEL Lower UEL Upper

Extinguisher Media

NA NA

Use media suitable for surrounding

areas

Special Fire Fighting Procedures Unusual Fire and Explosion Hazards No special procedures required

None known

# <u>SECTION 5</u> PHYSICAL HAZARDS (REACTIVITY DATA)

Stability:

Normally stable

Incapability - Materials to Avoid:

None known

Hazardous -

Decomposition Products:

None known

# SECTION 6 HEALTH HAZARDS

Signs & Symptoms of Exposure:

Prolonged inhalation of mist may cause

mild respiratory irritation.

Prolonged contact may cause mild skin irritation in sensitive individuals. Eye contact may case irritation.

Medical Conditions Generally Aggravated by Exposure:

None known

Emergency First Aid:

EYES:

Flush eyes with large amounts of water. Get medical attention if irritation persists.

SKIN:

Wash affected area with large amounts of water. Get medical help if irritation

persists.

INHALATION:

Move victim to fresh air. Get medical

attention if irritation persists.

INGESTION:

Contact local Poison Control Center or

physician IMMEDIATELY.

# SECTION 7 SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions to be taken in handling and storage:
Recommend storage between 40°F and 100°F

Other Precautions: None

Steps to be taken in case material is released or spilled: Clean up with absorbent material

Waste Disposal Methods (Consult Federal, State & Local Regulations: Flush waste to sewer with large amounts of water, if permitted by Local, State and Federal Regulations.

# SPECIAL PROTECTION INFORMATION/CONTROL MEASURES

Respiratory Protection:

Ventilation:

Local Exhaust: Mechanical:

Protective Gloves:

HMIS

Other Protective-

Work/Hygienic Practices:

Not normally required Not generally needed

Adequate Adequate

N/A 0-0-0

Clean-up all spills immediately. Practice

good personal hygiene

NE means Not Established

N/A means Not Available

IMPORTANT: Do not leave any blank spaces. If required information is unavailable, unknown, or does not apply, so indicate. 一直在自己的人们 医水类 化二十二十二人 医克格氏病 化环烷基化 化环糖糖酶 医原性病 医皮肤 经收收帐 网络小腿麻麻

The second

- 行動を関係けつ として強速数値

中的機能轉 中文學等275日本華國家國家

Settler of Committee of the Settler of the Committee of t

HASS NOTICE

The first of the original was great to

This product does not require a Material Safety Data

Sheet because it is a cosmetic product intended for the personal consumption of employees while in the workplace.

As such, OSHA regulations specifically exempt it from all requirements of the Hazard Communication Standard.

However, we recognize that compliance with the Hazard Communication Standard and assuring the safety of the customer's employees is of the greatest concern to our - customers, and that some customers seek to go beyond what is legally required. Therefore this data sheet is provided in the the interest of assuring that our customers are kept ful informed about our products and are able to fully communicate the proper procedures for the use of these products to their employees. In this spirit, we have included information about all major components defined as hazardous by OSHA (29 CFR Sec. 1910.1200) in the section marked "Hazardous" veros controcalast = Ingredients". & I DEPOSTABLE Andicateley in water ache verette etimbil annoche regio Appearance and Odor 7.000 200 Parence Tolking in (rades munic) employ

Form #409937

Reaportited Rate (Buschil)

#### MATERIAL SAFETY DATA SHEET

Page 2 of 4

Sani-Fresh® Super Duty Cleanser

May be used to comply with OSHA's Hazard Communication Standard, 29CFR1910.1200. Standard must be consulted for specific requirements.

# SECTION 1

Date Prepared:

June 27, 1989

Manufacturers Name:

Sani-Fresh International

A Unit of the Commercial Division

Scott Worldwide, Scott Paper Company

4702 Goldfield Address:

City, State, and Zip:

San Antonio, Texas 78218

(512) 661-5374 Emergency Telephone No.:

Signature of Person Responsible For Preparation (Optional):

#### SECTION 2 HAZARDOUS INGREDIENTS/IDENTITY

Hazardous Component(s)	OSHA	ACGIH	Exposure	<u> </u>	CAS
	PEL	TLV	Limits		No.
Cocamphodiacetate	NE	NE	NE	<10	68650-39-5
Linoleamide DEA	NE	NE	NE	<10	56863-02-6
Dipentene	NE	NE	NE	<10	138-86-3
Nonoxynol-9	NE	NE	NE	<10	9016-45-9
Non-hāzardous ingredients	NA	NA	NA	Bal.	

Unidentified ingredients are not considered hazardous under the Federal Hazard Communication Standard (29 CFR 1910.1200).

### SECTION 3 PHYSICAL & CHEMICAL CHARACTERISTICS

Boiling Point NE Specific Gravity (H20=1)
Vapor Pressure (mm Hg)
Vapor Density (Air = 1)
Solubility in Water 0.974 NE NE

Appreciable

Green Viscous Liquid: Citrus Odor Appearance and Odor

7.5 to 8.5 pН

Percent Volatile by Volume (minus water)

<10 Evaporation Rate (BuAc=1) <1

# BECTION 4 FIRE AND EXPLOSION DATA

Flash Point Method Used

vii bedalir, og s

Flammable Limits in Air & By Volume

LEL Lower **UEL Upper** 

Special Fire Fighting Procedures Unusual Fire and Explosion Hazards

The her and in None ( so that ad by encits so and colors of C.O.C. ASTM-D92 because

NA NA

tight to the Extinguisher Media Use media surcusit on or equity Use media suitable for surrounding

other precautions:

No special procedures required on Hazards None known

Secures None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure None known

Secure N

# SECTION 5 SECION 5 SECTION PHYSICAL HAZARDS (REACTIVITY DATA)

Normally stable

Stability: Incapability -Materials to Avoid: Hazardous -Decomposition Products:

None known

None known

A Garage pay from

# SECTION 6 HEALTH HAZARDS

Signs & Symptoms of Exposure:

Prolonged inhalation of mist may cause mild respiratory irritation was Prolonged contact may cause mild skin irritation in sensitive individuals. Eye contact may case irritation.

1000年1000日 安全市共享集成的基础

THE VOLE PUR SHOWN

马南河 "四月江江开州南京

identification.

3.7974

Medical Conditions Generally Aggravated by Exposure:

None known

Emergency First Aid:

EYES:

Flush eyes with large amounts of water. Get medical attention if irritation persists

SKIN:

Wash affected area with large amounts of water. Get medical help if irritation persists.

INHALATION:

Move victim to fresh air. Get medical attention if irritation persists.

INGESTION:

are money that successful Labour Contact local Poison Control Center or physician IMMEDIATELY.

# SECTION 7 SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions to be taken in handling and storage: Recommend storage between 40°F and 100°F

Other Precautions:

Steps to be taken in case material is released or spilled: Clean up with absorbent material

Waste Disposal Methods (Consult Federal, State & Local Regulations: Flush waste to sewer with large amounts of water, if permitted by Local, State and Federal Regulations.

# BECTION 8 SPECIAL PROTECTION INFORMATION/CONTROL MEASURES

Respiratory Protection:

Ventilation: Local Exhaust: Mechanical:

Protective Gloves:

HMIS

Other Protective-

Work/Hygienic Practices:

Not normally required Not generally needed

Adequate Adequate N/A 0-0-0

Clean-up all spills immediately. Practice

good personal hygiene

NE means Not Established

N/A means Not Available

21,27

IMPORTANT: Do not leave any blank spaces. If required information is unavailable, unknown, or does not apply, so indicate.



# North American Refractories Co.

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115 216/621-5200

# NORTH AMERICAN REFRACTORIES PRODUCT SAFETY DATA SHEET

MANUFACTURER

MSDS # 2019-00

NORTH AMERICAN REFRACTORIES

Vendor:

Emergency Phone Number East (814) 236-3890 West (415) 432-4741 Canada (416) 765-4404 MSDS prepared by: NORTH AMERICAN REFRACTORIES Technical Center (814) 234-7981

Date Issued: 07/09/89 Date Revised: 05/03/89

Product Type: Refractory Brick Shape - Basic

Trade Name: ROMAG V

Product SARA Hazard Class: (2) Delayed or Chronic

WHMIS Hazard Class (CANADA): Class D - Division 2: Toxic Material (CPR 60)

SARA NOTICE: This product contains a chemical(s) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization

of the Superfund Amendments and Reauthorization Act of 1986 and Part 40 CFR Part 372. For the name and amount of the subject chemical see

Section II - CHEMICAL COMPOSITION of this Product

Safety Data Sheet.

Chemical Name: Chrome Magnesite Brick

Chemical Family: MgO, Cr203

Ingredients: CAS Number: PCT:

\*\*Chromite 1308-31-2 10.0 - 30.0% Magnesia 1309-48-4 30.0 - 70.0%

\*\*Chemical(s) subject to Section 313 of Title III of the SuperFund Amendments and Reauthorization Act of 1986 and CFR Part 372

Appearance and Odor: Black to brown, brick shapes, odorless

Odor threshold (p.p.m.): Not applicable.

Specific Gravity: Not available.



# North American Refractories Co.

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115 216/621-5200

Vapor Pressure (mm): Not applicable. Vapor Density (air=1): Not applicable. Boiling Point (\*F): Greater than 1000°F Solubility in Water: Not available. % Volatile (by weight): Not applicable.

pH: 9 to 10.9 range

Density: 2.5 to 3.4 gm/cc range

Coefficient of Water/Oil Distribution: Not applicable.

Flammability: This product is non-flammable and will not support combustion.

Threshold Limit Value: For dust containing Trivalent Chrome (Cr 3):

OSHA:.....1.0mg/m3 as Cr ACGIH:......0.5mg/m3 as Cr

For dust containing Hexavalent Chrome (Cr 6):

OSHA:.....0.5mg/m3 as Cr ACGIH:....0.05mg/m3 as Cr

For all ingredients not listed above:

OSHA:.....10mg/m3 total dust ACGIH:.....10mg/m3 total dust

Effects of Overexposure: Chronic exposure to dust could cause pulmonary problems.

#### TRIVALENT CHROME:

Long term exposure to Trivalent Chrome does not present a health risk of any type. However, during service, exposure to high temperatures and/or certain chemical elements, a change may occur in this product. Some of the Cr 3 may be converted to Cr 6. Some Hexavalent Chrome compounds (Cr 6) have been found to present an increased cancer risk. A hazard evaluation must be done to determine the amount of Cr 6 present during tearout. Until that time avoid skin contact or inhalation of dust.

Toxicity data:

LD50 or LC50 is not available for trivalent Chrome Oxide or the mineral Chromite.

CARCINGENICITY INFORMATION
As shipped Hexavalent Chrome is less than 0.1%.
No ingredient in this product is found on either the Federal OSHA, NTP, or IARC list of carcinogens.

Emergency and First Aid Data:

Eyes: Flush with water and get medical help. Skin: Wash thoroughly with soap and water.



# North American Refractories Co.

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115 216/621-5200

Inhalation: Remove to fresh air.

\*\*\*\*\*\*\*\*\*\*\* SECTION VI - REACTIVITY DATA \*\*\*\*\*\*\*

Stability and Reactivity: This product is stable and non-reactive.

SECTION VII - SPILL AND LEAK PROCEDURES \*\*\*\*\*\*\*\* \*\*\*\*\*\*\*\*\*\*\*

Steps to be Taken in Case of a Spill:

Avoid generating dust exposure during cleanup. Recover material and store under roof. Avoid creating a water run-off from this product.

Waste Disposal Method: Results of leach test on this product exceed the EPA hazardous waste criteria for chromium (5mg/1). Higher or lower levels of leachable chromium may be present after service. Tests must be run to determine the concentration of leachable chrome, prior to disposal. Dispose ot this product in accordance with federal, state, and local

regulations.

\*\*\*\*\*\*\*\*\*\*\* SECTION VIII - INDUSTRIAL HYGIENE INFORMATION \*\*\*\*\*

Ventilation: Local exhaust recommended to maintain exposures

below TLV.

Respiratory Protection: NIOSH approved dust type for exposures above TLV.

Protective Gloves: Recommended.

Eve Protection: Recommended.

\*\*\*\*\*\*\*\* SECTION IX - SPECIAL PRECAUTIONS \*\*\*\*\*\*\*\*\*

Precautionary Labeling:

Product contains chrome spinel.

WARNING: This product contains a chrome spinel and trace amounts of hexavalent chrome (Cr 6). During service, exposure to high temperatures and/ or certain chemical elements, a change may occur in this product creating higher levels of Cr 6. Some compounds of Cr 6 have been found to present an increased cancer risk. Maximum care to avoid skin contact or inhalation should be used during tearout of this product.

Disposal: Results of leach tests conducted on this product exceed the EPA hazardous waste critera for chromium (5mg/l). Dispose of this product in accordance with applicable federal, state, and

local regulations.

\*\*\*\*\*\*\*\*\*\*\*

#### North American Refractories Co.

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115 216/621-5200

\*\*\*\*\*

SECTION X - SPECIAL INFORMATION

#### CHROME CONTAINING REFRACTORIES

This product like all refractories containing either a chrome oxide or chrome spinel has the potential to form hexavalent chrome compounds. Hexavalent chrome is a potential problem from two standpoints.

The first is as a health hazard. valent chrome compounds, most notably calcium chromate, have been found to increase the risk of lung cancer in laboratory animals. Calcium chromate is likely to be one of the compounds present in used refractories found to contain Cr6. The amount of hexavalent chrome found in most used refractories is quite small by industrial hygiene standards (often less than 1%). Prudent practice in dealing with a cancer suspect, however, tells us to take special care. The user of any chrome containing product needs to conduct appropriate hygiene testing to determine the level of Cr 6 present in the tearout of all applicable processes. This testing information must be used to determine the best methods of protecting personnel during tearout and subsequent handling of the scrap. The TLV for hexavalent chrome is:

OSHA.....0.5mg/m3 as Cr ACGIH.....0.05mg/m3 as Cr Until this type of testing can be done, appropriate measures must be taken to avoid skin contact and inhalation of dust.

The second problem with hexavalent chrome is of an environmental nature. The EPA hazardous waste criterion for chromium is Smg/l (leachate). This criterion is based on being 100 times the drinking water criterion. The weight percent of hexavalent chrome in a refractory can be much less than 0.1% and be over EPA limits for a hazardous Due to the low amounts of Cr 6 needed to present an environmental problem, the user must do the fallowing: 1. Have chrome refractories scrap tested as per EPA criteria. 2. Each process using chrome refractories be evaluated to find ways to reduce the potential of forming hexavalent chrome. A promising approach to this is thermal reduction i.e., fixation by means of firing in place for several hours under active reducing conditions. 3. If the scrap is above the EPA limit, dispose of it according to federal, state and local



### North American Refractories Co.

500 Halfe Building 1228 Euclid Avenue Cleveland, Ohio 44115 216/621-5200

guidelines.

Some states and local areas may have limits lower than the EPA limit. Please check with state and local officals.

#### MATERIAL SAFETY DATA SHEET (MSDS) Please retain for your records.

MAJERIAL SAFETY DATA SHEET PRODUCT IDENTIFIER (QUICK IDENTIFIER): 5A136 K-type Stencil Ink, Black P/N: JON: MAL DATE: SECTION I-PRODUCT INFORMATION MANUFACTURER: MARSH COMPANY EMEDCENCY TELEPHONE: 618/234-1122 ADDRESS: Belleville, Illinois 62222 CHEMICAL NAME & SYNONYMS: Mixture CHEMICAL FAMILY: Aliphatic Hydrocarbon HAZARO RATINGS: 0 - LEAST 4 = EXTREME FLAMMABILLITY REACTIVITY R = 0 H = 2 SECTION II-MAZARDOUS COMPONENTS INGREDIENT OSHA NUMBER CAS WT.A 1D ACGIH OSHA TLV RANGE PEL STEL Kerosene (fuel oil #1) 8008-20-6 oil mist oil mist Mineral Spirits 8052-41-3 Naphthalehe 91-20-3 60-100 28g/kg 5mg/m3 500/03 SECTION III-PHYSICAL DATA Boiling Point (Degrees Fahrenheit):
Vapor Pressure (wm Hg.):
Vapor Density (Air-I):
Solubility in Water:
Specific Gravity (Water-I)
Percent Volatile by Volume (%):
Evaporation Rate: (n-Butyl Acetate - 1) Appearance and Odor:
odor Black with petroleum solvent SECTION IV-FIRE & EXPLOSION HAZARD DATA .. Point: 110 degrees fahrenheit Flammable Limits: LEL M.A. UEL N.A. Extinguishing Media: Carbon dioxide, dry chemical or alcohol foam. Special Fire Fighting Procedures: None Known. Unusual Fire and Explosion Hazards: None Known. SECTION V-REACTIVITY DATA Stability: X Stable Unstable Conditions to Avoid: Avoid exposure to heat, flame and sparks. Incompatibility: Keep away from oxidizers and strong acids. Hazardous Decomposition Products: Carbon monoxide from incomplete combustion. Hazardous Polymerization: Will not occur. Conditions to Avoid: Avoid exposure to heat and flame. SECTION VI-HEALTH HAZARD DATA Moderately toxic by ingestion and other routes. Irritant to skin, mucous membrane, and a severe eye irritant. Marcotic in high concentrations. Chronic overexposure can cause kidney damage. Chemical Listed as Carcinogen or Potential Carcinogen: National Toxicology Program - No I.A.R.C. Monographs - No OSHA - No Emergency & First Aid Procedures: Eye Contact: Flush with water 15 minutes and seek medical attention.

Skin Contact: Wash skin with soap and water. Remove contaminated clothing.

Inhalation: Remove to fresh air, if discomfort persists, seek

kion: DO MOT induce vomiting. Call physician immediately.

Route of Entry: Inhalation - Yes Eyes - Yes Skin - Yes SECTION VII-SPILL OR LEAK PROCEDURES Steps to be Taken in Case Material is Released or Spilled: Isolate spill from sources of ignition. Contain spill using suitable absorbent - containers in an approved DOP container for proper disposal. Waste Disposal Method: Dispose of in accordance with local, state and federal regulations. SECTION VIII-SPECIAL PROTECTION INFORMATION NIOSH/NSHA approved respirator when airborne Respiratory Protection: levels may exceed PEL. Ventilation: General Exhaust Acceptable Local Exhaust Preferable Protective Gloves: Chemical Resistant Eve Protection: Safety Goggles Other Protective Clothing or Equipment: As necessary to avoid prolonged contact. SECTION IX-SPECIAL PRECAUTIONS Precautions to be Taken in Handling and Storing: Material is Classified as combustible - Keep away from heat and open flame. Other Precautions: Hazardous product residue may remain after the product has been removed from its container. Do not reuse "empty" container w/o commercial cleaning or reconditioning. SECTION X-SHIPPING INFORMATION WHMIS Classification - B3 Proper Shipping Name DOI Ink IMCO Ink Hazard Classification Not regulated by Title 49 Flammable Liquid This Material Safety Data Sheet ("MSDS") is being furnished to immediate purchaser of material to which it refers without representation or marranty as to the completeness or accuracy of any information or recommendations contained herein. This MSOS is not intended to create any liability of any kind on the part of Marsh Company ("MC"). IN NO EVENT WILL MC BE RESPONSIBLE FOR ANY DEATH INJURY OR DAMAGE OF ANY MATURE WHATSOFYER RESULTING FROM THE USE OF RELIANCE WOWN, OR MISUSE OF THE MSOS OR MATERIAL TO WHICH TO REFERS. WO REPRESENTATIONS OR WARRANTIES, WHETHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER MOVEMENT, FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER MOVEMENT, THIS MSOS is not intended as a recommendation for uses which infringe valid patents or extended licenses under valid patents. This MSDS is furnished upon the express condition that all persons receiving it will make their own determination as to its suitability for their purposes prior to use. Responsibility for compliance with applicable federal, state or local regulations concerning discomination of the MSDS and sale and use of the material to which it refers rests solely upon the purchaser. Additional Comments TSCA Status: In Compliance

SARA Title III Info: (40CFR37Z) This product contains the following chemicals subject to the reporting requirements of Section 313. Into information must be included in all MSDS's that are copied and distributed for this product.

RCRA Info: (40CFR261.20-24) It is up to the product user to determine, at the time of disposal, if the material should be classified as a hazardous waste.

CERCLA Info: (40cfr302.4) Not subject to reporting requirements. Heavy Metals Statement (AMSI 166.1) (RCRA TCLP) (SARA Title III: Section 313) (COMEG) (plus B1, Ga, In and Sn): This product is not produced with components known to contain heavy metals.

COMEG Certification (Cd, Cr, Pb and Hg): These metals have not been intentionally introduced and the sum of any incidental presence is less than 100ppm by weight.

FDA Status: (21CFR): This product dos not have approval as a food additive, either direct or indirect. When this product is applied to the outside surface of food containers and the container itself acts as a functional barrier so that there is no migration of the components of this product to food, then it would not be considered a food additive.

USDA Status: (9CFR): This product is not intended to be either a direct or indirect food additive. It is chemically acceptable for use on packaging material if it is separated from the meat or powltry by an effective barrier to the migration of the components of this product.

U.N. No. 1210

#### MATERIAL SAFETY DATA SHEET (MSDS) Please retain for your records.

MATERIAL SAFETY BATA SHEET PRODUCT IDENTIFIER (QUICK IDENTIFIER): 5A136 K-type Stencii Ink, Black 5A135 Metac P/N: TON: ML DATE:

SECTION I-PRODUCT INFORMATION

MANUFACTURER: TELEPHONE: 618/234-1122

MARSH COMPANY

**EMERGENCY** 

ADDRESS: Belleville, Illinois

CHEMICAL NAME & SYNONYMS:

Mixture

CHEMICAL FAMILY:

Aliphatic Hydrocarbon

HAZARD RATINGS: 0 = 4 - EXTREME FL REACTIVITY R

HEALTH

SECTION II-HAZARDOUS COMPONENTS

INGREDIENT OSHA NUMBER WT. % ACETH OSHA RANGE TLV PFI STEL

Kerosene (fuel oil #1) 8008-20-6 oil mist oil mist Mineral Spirits 8052-41-3 Naphthalene 91-20-3 60-100 5mg/m3

SECTION III-PHYSICAL DATA

Roiling Point (Degrees Fahrenheit):
Yapor Pressure (mm Hg.):
Yapor Density (Air-1):
Solubility in Water:
Specific Gravity (Water-1)
Percent Volatile by Volume (%):
Evaporation Rate:

Negligible 0.85-0.90 85 (n-Butyl Acetate = 1)

Appearance and Odor:

Black with petroleum solvent

SECTION IV-FIRE & EXPLOSION HAZARD DATA

) Point:

110 degrees fabrenheit

i-warmable Limits:

LEL N.A. UEL N.A.

Extinguishing Media: Carbon dioxide, dry chemical or alcohol foam.

Special Fire Fighting Procedures: None Known. Unusual Fire and Explosion Hazards: None Known.

SECTION V-REACTIVITY DATA

Stability: X Stable

Conditions to Avoid: Avoid exposure to heat, flame and sparks.

Incompatibility: Keep away from oxidizers and strong acids.

Hazardous Decomposition Products: Carbon monoxide from incomplete combustion.

Mazardous Polymerization: Will not occur.

Conditions to Avoid: Avoid exposure to heat and flame.

SECTION VI-HEALTH HAZARD DATA

Health Hazards:

Moderately toxic by ingestion and other routes. Irritant to skin, whocous membrane, and a severe eye irritant. Marcotic in high concentrations. Chromic overexposure can cause kidney damage.

Chemical Listed as Carcinogen or Potential Carcinogen:

National Toxicology Program - No I.A.R.C. Monographs - No OSHA - No

Emergency & First Aid Procedures:

Eye Contact: Flush with water 15 minutes and seek medical attention.

Skin Contact: Wash skin with scap and water. Remove contaminated clothing.

Inhalation: Remove to fresh air, if discomfort persists, seek medical attention.

astion: DO MOT induce vomiting. Call physician immediately.

Route of Entry:

Inhalation - Yes Eyes - Yes Skin - Yes

SECTION VII-SPILL OR LEAK PROCEDURES

Steps to be Taken in Case Material is Released or Spilled:

Isolate spill from sources of ignition. Contain spill using suitable absorbent - containers in an approved DOI container for proper disposal.

Waste Disposal Method:

Dispose of in accordance with local, state and federal regulations.

SECTION VIII-SPECIAL PROTECTION INFORMATION

Respiratory Protection: levels may exceed PEL.

MIOSH/MSHA approved respirator when airborne

Ventilation: General Exhaust Acceptable

Local Exhaust Preferable

Protective Gloves:

Chemical Resistant

Eve Protection:

Safety Goggles

Other Protective Clothing or Equipment:

As necessary to avoid prolonged contact.

SECTION IX-SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing: Material is Classified as combustible - Keep away from heat and open flame.

Other Precautions: Hazardous product residue may remain after the product has been removed from its container. Do not reuse "campty" container w/o commercial cleaning or reconditioning.

SECTION X-SHIPPING INFORMATION

WIMIS Classification - 83

Proper Shipping Name DOT Ink IMCO Ink

Hazard Classification Mot regulated by Title 49 Flammable Liquid

U.N. No. N.A. 1210

This Material Safety Data Sheet ("MSDS") is being furnished to immediate purchaser of material to which it refers without representation or warranty as to the completeness or accuracy of any information or recommendations contained herein.

This MSDS is not intended to create any liability of any kind on the part of Marsh Company ("MC"). IN NO EVENT WILL MC BE RESPONSIBLE FOR ANY DEATH, INJURY OR DAWAGE OF ANY MATURE MHATSOEVER RESULTING FROM DIE USE OF THE MSDS OR MATERIAL TO MICH TO REFERS. NO REPRESENTATIONS OR MARRANTIES, WHETHER EXPRESS OR IMPLIED OF MESCHAMMATRITY, FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER NATURE, ARE MADE HEREUNDER. This MSDS is not intended as a recommendation for uses which infringe valid patents or extended licenses under valid patents.

This MSDS is furnished upon the express condition that all persons receiving it will make their own determination as to its suitability for their purposes prior to use. Responsibility for compliance with applicable federal, state or local regulations concerning dissemination of the MSDS and sale and use of the material to which it refers rests solely upon the purchaser.

Additional Comments

TSCA Status: In Compliance

SARA Title III Info: (4DCFR372) This product contains the following chemicals subject to the reporting requirements of Section 313. This information must be included in all MSDS's that are copied and distributed for this product.

RCRA Info: (40CFR261.20-24) It is up to the product user to determine, at the time of disposal, if the material should be classified as a hazardous waste.

CERCLA Info: (40cfr302.4) Not subject to reporting requirements.

Heavy Metals Statement (AMSI 166.1) (RCRA TCLP) (SARA Title III: Section 313) (COMES) (plus B1, Ga, In and Sn): This product is not produced with components known to contain heavy metals.

CONEG Certification (Cd, Cr, Pb and Hg): These metals have not been intentionally introduced and the sum of any incidental presence is less than 100ppm by weight.

FDA Status: (21CFR): This product dos not have approval as a food additive, either direct or indirect. When this product is applied to the outside surface of food containers and the container itself acts as a functional barrier so that there is no migration of the components of this product to food, then it would not be considered a food additive.

USDA Status: (9CFR): This product is not intended to be either a direct or indirect food additive. It is chemically acceptable for use on packaging material if it is separated from the meat or poultry by an effective barrier to the migration of the components of this product.



### MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION

08/06/91

ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS ISSUE DATE: 11/11/89 ZEP CARPET 85

PAGE 1 OF 3

SUPERSEDES: 08/25/89 PRODUCT NUMBER: 1294

SECTION I - E M E R G E M C Y C O N T A C T S

P.O. BOX 2015

ZFP MANUFACTURING COMPANY TELEPHONE: (404)352-1680 BETWEEN 8:00 AM-5:00 PM (EST) MON-OFFICE HOURS, WEEKENDS, AND HOLIDAYS: AREA CODE 404

ATLANTA, GEORGIA 30301

435-2973, 996-0899, 351-2952, 971-3367, **432-2**873

TRANSPORTATION EMERGENCY: CHEMTREC: TOLL FREE 1-800-424-9300 ALL CALLS RECORDED

DISTRICT OF COLUMBIA (202)483-7616 ALL CALLS RECORDED

SECTION II - H A Z A R D O U S I N G R E D I E N T S

DESIGNATIONS

TLV EFFECTS W IN

\*\* TETRASCOIUM ETHYLENEDIAMINE TETRAACETATE \*\*

(PPM) (SEE REVERSE) PROD.

ETHYLENEDINITRILO TETRA-ACETIC ACID, TETRA SODIUM SALT; EOTA; CAS# &4-02-8; RTECS# AH4025000; OSHA PEL- NVO IRR

M/D

-8% SODIUM LINEAR ALKYL MARHTHALENE SULFONATE \*\* CAS# N/D IRR

< 5

PROPRIETARY: OSHA PEL-N/D

SPECIAL MOTE: ADVERSE HEALTH EFFECTS WOULD NOT BE EXPECTED UNDER RECOMMENDED CONDITIONS OF USE SO LONG AS PRESCRIBED SAFETY PRECAUTIONS ARE PRACTICED.

SECTION III - HEALTH HAZARD DATA

ACUTE EFFECTS OF OVEREXPOSURE:

THIS PRODUCT IN CONCENTRATED FORM MAY BE AN EYE IRRITANT, INFLAMMATION OF EYE TISSUE IS CHARACTERIZED BY REDMESS, WATERING, AND/OR ITCHING.

#### NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up to use?

By way of explanation, we have identified in Section limit this form those components which contribute some hazard to our product. The hazard designations correspond to those required brider OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

#### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

GAR: Carcinogen—Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (ARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures potyers and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressure:

COR: Corrosive Causes irreversible afterations in trying tissue (e.g. burns).

EIR: Eye Imtant Only -- Causes reversit -- reddening and/or inflammation of eye tissues.

Estid: Estimated

FBL: Flammable—At temperatures under 400°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic—The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion—A primary route of exposure through swallowing a liquid or solid (see below).

iNH: Inhalation—A primary route of exposure through breathing of vapors (see below).

IAR: Irritant -- Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable - Category is not appropriate for this product.

N/D: Not Determined -Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer—Causes aflergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value—A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic—The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time-weighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

#### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, waitings and advisories in the product's label and Material Safety Data Sheet.



ZEP MANUFACTURING COMPANY

TST IN MAINTENANCE PRODUCTS

### MATERIAL SAFETY DATA SHEET

#### AND SAFE HANDLING AND DISPOSAL INFORMATION

ISSUE DATE: 11/11/89 ZEP CARPET SA

SUPERSEDES: 08/25/89 PRODUCT NUMBER: 1296

SECTION III - HEALTH HAZARO DATA (CONTINUED)

CHRONIC EFFECTS OF OVEREXPOSURE:

REPEATED OR PROLONGED SKIN CONTACT MAY PRODUCE CHRONIC INFLAMMATION OR DERMATIT-IS, CHARACTERIZED BY RECNESS, SCALING, OR ITCHING, REPEATED EYE EXPOSURE MAY

PRODUCE CHRONIC INFLAMMATION OF THE EYE OR CORNEAL DAMAGE.

NONE OF THE HAZARDOUS INGREDIENTS ARE LISTED AS CARCINOGENS BY IARC, NTP, & OSHA

EST'D PEL/TIV: NOT ESTABLISHED PRIMARY ROUTES OF ENTRY: ING.

HMIS CODES: HEALTH 2: FLAM. 0: REACT. 0: PERS. PROTECT. B ; CHRONIC HAZ. YES

FIRST AID PROCEDURES:

SKIN : FLUSH CONTAMINATED SKIN WITH PLENTY OF WATER. CONSULT A PHYSICIAN

IF IRRITATION DEVELOPS.

EYES : IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, OC-

CASIONALLY LIFTING UPPER AND LOWER LIDS. GET MEDICAL ATTENTION AT ONCE.

INHALE: MOVE EXPOSED PERSON TO FRESH AIR. IF IRRITATION PERSISTS,

GET MEDICAL ATTENTION PROMPTLY.

-GEST: IF THIS PRODUCT IS SWALLOWED, DO NOT INCUCE VOMITING, IF VICTIM IS

CONSCIOUS GIVE PLENTY OF WATER TO DRINK. GET MEDICAL ATTENTION AT ONCE. 

SECTION IV - S P E C I A L P R O T E C T I O N I N F O R M A T I O N

PROTECTIVE CLOTHING : WEAR MEOPREME, MITRILE, OR MATURAL RUBBER GLOVES OR

GLOVES WITH PROVEN RESISTANCE TO THE INGREDIENTS LISTED.

EYE PROTECTION : WEAR TIGHT-FITTING SPLASH-PROOF SAFETY GLASSES

ESPECIALLY IF CONTACT LENSES ARE WORM.

RESPIRATORY PROTECTION: NO SPECIAL MEASURES ARE REQUIRED.

VENTILATION : NO SPECIAL MEASURES ARE REQUIRED.

SECTION V - P H Y S I C A L D A T A

BOILING POINT (F) : 4215 SPECIFIC GRAVITY

VAPOR PRESSURE(MMHG): N/D VAPOR DENSITY(AIR=1): N/D PERCENT VOLATILE BY VOLUME (%) EVAPORATION RATE(WATER =i): i.O SOLUBILITY IN WATER : COMPLETE : 10.5-11.0 PH(CONCENTRATE)

PH(USE DILUTION OF 1% SOLUTION ): 10.5

APPEARANCE AND ODOR : THIN, SLIGHTLY AMBER LIGUID WITH A LEMON FRAGRANCE

SECTION VI - FIRE AND EXPLOSION DATA

\*SH POINT(F) (METHOD USED): MOME FLAMMABLE LIMITS LEL M/A UEL M/A

EXTINGUISHING MEDIA : NON-COMBUSTIBLE

SPECIAL FIRE FIGHTING: MOME UNUSUAL FIRE HAZARDS : NONE

Appendix33-000619

#### NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

#### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen—Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible -- At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

FBL: Flammable—At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic—The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion—A primary route of exposure through swallowing a liquid or solid (see below).

INH: Inhalation—A primary route of exposure through breathing of vapors (see below).

IRR: Irritant—Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable—Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer—Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value—A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic—The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This timeweighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry-this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalizedsystemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent. with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

#### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and correleteness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our modulets, or the products of other manufacturers in combination with our products; may be used. Zep assumes no liability or responsibility for less or damage resulting from the improprie use dehandling of our products, from incompatible product combinations, or you the failure to follow instructions, which is addisories in the product's label and Material Safety Dato Show!

人心以信仰的



### MATERIAL SAFETY DATA SHEET

#### AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 3 OF 3

ISSUE DATE: 11/11/89 ZEP CARPET SE

SUPERSEDES: 08/25/89 PRODUCT NUMBER: 1274

ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS

SECTION VII - REACTIVITY DATA

STABILITY

: STABLE

INCOMPATIBILITY(AVOID) : STRONG ACIDS AND OXIDIZING AGENTS

FOLYMERIZATION : WILL NOT OCCUR.

HAZARDOUS OSCOMPOSITION: CARBON DIOXIDE, CARBON MONOXIDE, AND OTHER UNIDENTIFIED

ORGANIC COMPOUNDS.

SECTION VIII - S F I L L A N D DISPOSAL PROCEDURES

STERS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: OBSERVE SAFETY PROCEDURES IN SECTION 4 & 9 DURING CLEAN-UP. ABSORB SPILL ON IMERT ABSORBENT MATERIAL (EG ZEP-O-ZORB). PICK UP AND PLACE RESIDUE IN A SUITABLE WASTE CONTAINER OR: IF PERMITTED: FLUSH TO SEVER. THOROUGHLY RINSE SPILL AREA WITH WATER.

#### WASTE DISPOSAL METHOD:

LIGUIO WASTES ARE NOT PERMITTED IN LANDFILLS. THIS PRODUCT IS NOT CONSIDERED A HAZARDOUS WASTE UNDER RORA. UNUSAGLE LIQUID MAY BE ABSORBED ON AN INERT ABSORB-ENT MATERIAL (EG ZEP-O-ZORG), DRUMMED, AND TAKEN TO A CHEMICAL OR INDUSTRIAL LANDFILL. IN SOME AREAS DISPOSAL BY FLUSHING INTO A SANITARY SEWER WITH PLENTY OF WATER MAY BE PERMISSIBLE. CONSULT LOCAL, STATE, AND FEDERAL AGENCIES FOR PROPER DISPOSAL METHOD IN YOUR AREA.

RORA HAZ. WASTE MOS.: N/A

SECTION IX - S P E C I A L P R E C A U T I O N S

PRECAUTIONS TO BE TAKEN WHEN HANDLING AND STORING: STORE TIGHTLY CLOSED CONTAINER IN A DRY AREA AT TEMPS. BETWEEN 40-120 DEGREES F. STORE AWAY FROM STRONG ACIDS AND OXIDIZING COMPOUNDS.

KEEP PRODUCT AWAY FROM SKIN AND EYES.

KEEP OUT OF THE REACH OF CHILDREN.

SECTION X - TRANSPORTATION DATA

DOT PROPER SHIPPING NAME

San A

MONE

DOT HAZARD CLASS: N/A

DOT LABEL/PLACARD: NOME DOT I.D. NUMBER : N/A

| | TSCA CHEMICAL INVENTORY - ALL INGREDIENTS ARE LISTED

EFA CWA 40CFR PART 117 SUBSTANCE(RQ IN A SINGLE CONTAINER): NONE

Appendix33-000621

#### NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

#### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen—Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of Ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only—Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL: Flammable—At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic—The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion—A primary route of exposure through swallowing a liquid or solid (see below).

INH: Inhalation—A primary route of exposure through breathing of vapors (see below).

IRR: Irritant—Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable—Category is not appropriate for this product.

N/D: Not Determined—Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer—Causes affergic reaction after repeated exposure.

SKIN. A primary route of exposure through contact with the skin (see below).

TLV. Threshold Limit Value—A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic—The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the ESTD PELFLV shows in Section III pertains to airborne concentrations of vapors from the product as a whole. This time-weighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that hearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not portain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized systemic or specific organ toxic effect.

As a further word of mutton. Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of Ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drem reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of. Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

#### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the impropried combinations or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheel

ASHGROVE CEA



# IMAZINE 41

#### SECTION I — IDENTIFICATION OF PRODUCT MANUFACTURER'S NAME: EMERGENCY TELEPHONE NO.: Platte Chemical Co. (303) 358-4400 or CHEMTREC (800) 424-9300 150 South Main Street Fremont, Nebraska 68025 TRADE NAME AND SYNONYMS: CLEAN CROP SIMAZINE 4L FLOWABLE HERBICIDE CHEMICAL NAME AND SYNONYMS: Simazine; 2-chloro-4,6-bis(ethylamino)-s-triazine **CHEMICAL FAMILY: Triazine Herbicide** WE KIEL OF A GINCO LAW OF SARA TITLE III HAZARD CATEGORY: IMMEDIATE FIRE SUDDEN RELEASE OF SECTION II --- HAZARDOUS INGREDIENTS OF MIXTURES COMPONENT: THRESHOLD LIMIT VALUE (Units): Simazine (CAS: 122-34-9) ..... None established s.post 1.35 THIS PRODUCT CONTAINS THE FOLLOWING SUBSTANCES WHICH ARE REGULATED UNDER SARA, TITLE III, SECT. 313: None SECTION III - PHYSICAL DATA: naeragdir APPEARANCE AND ODOR: Off-white to light brown flowable suspension with virtually no odor **SPECIFIC GRAVITY (WATER = 1):** 1.103-1.105 BOILING POINT (\*F): >200°F (water) VAPOR PRESSURE (MM. OF MERCURY): 10.3 (Reid ASTM 0323) DENSITY: 9.2 lbs./gal. PERCENT VOLATILE (BY VOLUME): Not available approx. 45% **VAPOR DENSITY (AIR = 1):** 0.011 (HCR TM007) (water) SOLUBILITY IN WATER: Disperses with minimal agitation EVAPORATION RATE (BUTYL ACETATE = 1): Not available (water) THE REPORT OF THE PROPERTY OF To Min maining n. 64bis ... OMEGO AND SECTION IV — FIRE AND EXPLOSION HAZARD DATA FLASH POINT (SPECIFY METHOD/\*F): Does not flash; not applicable. FLAMMABLE LIMITS (PERCENT BY VOLUME): Not applicable. FIRE EXTINGUISHING MEDIA: Considered non-combustible; use medium appropriate to surrounding fire. Dry Chemical, CO<sub>2</sub>, Foam, Water spray or fog. pain, the control that a participation of the control of the cont SPECIAL FIRE FIGHTING PROCEDURES: Smoke and furnes from fire may contain hazardous components. Use self-contained breathing apparatus and full protective clothing. UNUSUAL FIRE AND EXPLOSION HAZARDS: If water is used to fight fire or cool containers, contain run-off by diking to prevent contamina-CHART PURCOUTION tion of water supplies. SECTION V -- REACTIVITY DATA STATEMENT CONDITIONS TO AVOID: Excessive heat. STABILITY: Stable. INCOMPATABILITY (Materials to avoid): Not known. HAZARDOUS DECOMPOSITION PRODUCTS: Not known. Oxides of nitrogen, chlorine-containing compounds and other unknown. hazardous materials may be formed in a fire situation. Incomplete combustion may lead to formation of carbon monoxide and/or other asphyxiants.

READ THE BACK.

CONDITIONS TO AVOID: None known.

Carried Miller

4

eq . 1

49

HAZARDOUS POLYMERIZATION: Will not occur.

21929

#### MSDS: SIMAZINE 4L FLOWABLE HERBICIDE

#### SECTION VI - HEALTH HAZARD DATA

#### **EFFECTS OF OVEREXPOSURE:**

Routes of Entry: Ingestion, inhalation, eyes and skin contact. **Most likely Route of Entry:** Dermal. Product is considered to be of low to moderate toxicity. May be harmful if swallowed or inhaled. May cause irritation of eyes, nasal passages, throat and skin. For Simazine: Acute Oral LD<sub>m</sub> (rat): 971 mg/kg

#### EMERGENCY AND FIRST AID PROCEDURES: Call a physician immediately in all cases of suspected poisoning.

Ingestion: Drink 1 or 2 glasses of water and induce vomiting. Never induce vomiting or give anything by mouth to an unconscious person. Keep head lower than chest to avoid aspiration into lungs. Call physician immediately.

Eyes: Flush with running water for at least 15 minutes while holding eyelids open. If irritation persists, get medical attention.

Skin: Remove all contaminated clothing. Wash skin and hair thoroughly with soap and water. Wash clothing before reuse. If irritation persists, get medical attention.

Inhalation: Remove to fresh air. If breathing is difficult, administer oxygen; if breathing stops administer artificial respiration. Get medical attention immediately.

#### MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

None known. Preexisting skin or respiratory disorders may be aggravated by excessive exposure to this material.

#### POTENTIAL CARCINOGEN STATUS:

Not known. None of the components in this product is listed by IARC, NTP or OSHA as a potential carcinogen.

#### SECTION VII — SPILL OR LEAK PROCEDURES

#### STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Contain spill; absorb liquids by covering with clay or other absorbent material; then vacuum or scoop and sweep up wastes and place in container for disposal.

#### WASTE DISPOSAL METHOD:

Material which cannot be used at the site should be disposed of in an approved waste disposal facility following all applicable Federal, State and Local regulations. Triple rinse empty containers and offer for recycling or reconditioning, or puncture and dispose of in an approved sanitary landfill. Do not contaminate water supplies by disposal of wastes or containers.

#### SECTION VIII — SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type): Not normally required. If vapors may exceed acceptable levels, wear MSHA/NIOSH-approved respirator or mask to protect against pesticide dusts, mists and vapors.

**VENTILATION:** 

LOCAL EXHAUST: Not normally required.

MECHANICAL (General): Not normally required.

SPECIAL: Not normally required.

OTHER: Work in a well-ventilated area.

MECHANICAL (General): Not normally required.

PROTECTIVE GLOVES: Rubber or impervious gloves recommended.

EYE PROTECTION: Chemical goggles or shielded safety glasses recommended.

OTHER PROTECTIVE EQUIPMENT: Wear clothing consistent with good practices for handling and applying pesticides. Wear protective clothing, including long pants, long-sleeved shirt, hat and rubber boots during mixing and loading operations and during application. Wash used clothing before reuse.

#### SECTION IX — SPECIAL PRECAUTIONS

#### PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

Store in a cool, dry place away from children, domestic animals, food and feed products, seed and fertilizer. Do not contaminate other stored products or the storage area by handling or storage of this product. Immediately clean up any spills which occur during handling and storage. Protect from freezing.

#### OTHER PRECAUTIONS:

Do not contaminate water supplies by handling or storage of product, cleaning of equipment or disposal of wastes. Keep work and storage areas clean. Toxic to fish and other aquatic organisms. Read and follow precautionary measures on product label.

#### SECTION X - DOT INFORMATION AND DATE

DOT SHIPPING DESCRIPTION: Not regulated by DOT DOT LABEL: None DATE OF ISSUE: 11/22/89 SUPERSEDES: 10/12/88

All information contained in this Material Safety Data Sheet is furnished free of charge and is intended for your evaluation. In our opinion the information is, as of the date of this Material Safety Data Sheet, reliable, however, it is your responsibility to determine the suitability of the information for your use. You are advised not to construct the information as absolutely complete since additional information may be necessary or desirable when particular, exceptional or variable conditions or circumstances exist or because of applicable laws or government regulations. Therefore, you should use this information only as a supplement to other information gathered by you, and you must make independent determinations of the suitability and completeness of the information from all sources to assure both proper use of the material described herein and the safety and health of employees. Accordingly, no guarantee expressed or implied is made by Platte Chemical Co. as to the results to be obtained based upon your use of the information, nor does Platte Chemical Co. assume any liability arising out of your use of the information.



## **Material Safety Data Sheet**

CHEVRON GST Oil 68

Page 1 of 6 CP5234231

PRIESTLEY OIL & CHEMICAL P O BOX 12570 PORTLAND, OR 97212 Print Date: November 25, 1989 MATERIAL ORDERED FOR: PACKAGE PICK-UP W.B. FOB WILLBRIDGE PORTLAND, OR 97210

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated in your MSDS. Discard any previous edition of this MSDS.

The Chevron MSDSs have been reformatted and expanded to provide you with useful hazard warnings and health evaluations and to facilitate your compliance with local, State and Federal regulations.

#### 1. PRODUCT IDENTIFICATION

CHEVRON GST 011 68

- A HAZARD WARNING IS NOT REQUIRED FOR THIS PRODUCT UNDER OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200)

CHEVRON PRODUCT NUMBER(S): CPS234231 PRODUCT INFORMATION: (800)582-3835

Revision Number: 10 Revision Date: 07/03/89 MSDS Number: 000201 NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200) by the Chevron Environmental Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

#### 2. FIRST AID

#### RYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worm.

#### SKIN CONTACT:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

#### INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

#### 3. IMMEDIATE HEALTH EFFECTS

#### EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

#### SKIN IRRITATION:

This substance is not expected to cause prolonged or significant skin irritation. This hazard evaluation is based on data from similar materials.

#### DERMAL TOXICITY:

If absorbed through the skin, this substance is considered practically non-toxic to internal organs. This hazard evaluation is based on data from similar materials.

#### RESPIRATORY/INHALATION:

If inhaled, this substance is considered practically non-toxic to internal organs. This hazard evaluation is based on data from similar materials.

INGESTION:

If swallowed, this substance is considered practically non-toxic to internal organs. This hazard evaluation is based on data from similar materials.

#### 4. PROTECTIVE EQUIPMENT

#### EYE PROTECTION:

No special eye protection is usually necessary.

#### SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.

Revision Number: 10 Revision Date: 07/03/89 MSDS Number: 000201

#### RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standards, the use of an approved respirator is required.

#### VENTILATION:

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

#### 5. FIRE PROTECTION

FLASH POINT: (COC) 446F (230C) Min.

AUTOIGNITION: NDA FLAMMABILITY: NA EXTINGUISHING MEDIA:

CO2, dry chemical, foam and water fog.

NFPA RATINGS: Health 0; Flammability 1; Reactivity 0; Special NDA; HMIS RATINGS: Health 0; Flammability 1; Reactivity 0; Other NDA; (Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

#### FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

#### COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide and water vapor; incomplete combustion can produce carbon monoxide.

#### 6. STORAGE, HANDLING, AND REACTIVITY

#### HAZARDOUS DECOMPOSITION PRODUCTS:

NDA

STABILITY:

Stable.

#### HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

#### INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

#### SPECIAL PRECAUTIONS:

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently.

CAUTION! Do not use pressure to empty drum or explosion may result.

Revision Number: 10 Revision Date: 07/03/89 MSDS Number: 000201

#### 7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Yellow liquid.

BOILING POINT: NDA MELTING POINT: NA EVAPORATION: NA

SPECIFIC GRAVITY: 0.88 @ 15.6/15.6C

VAPOR PRESSURE: NA

PERCENT VOLATILE (VOLUME %): NA

VAPOR DENSITY (AIR=1): NA

VISCOSITY: 61.2 cSt @ 40C (Min.)

#### 8. SPILL RESPONSE AND DISPOSAL

### CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour). SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problems other than those associated with oil spills.

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

#### DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

#### 9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

#### COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This substance is subject to the provisions of the Pennsylvania Worker and Community Right-to-Know Act. Specific chemical identities are trade secret under the provisions of 35 Pennsylvania Statute Section 7311.

Based upon information reviewed to date, this product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5mg/m3, the OSHA PEL is 5mg/m3.

The percent compositions are given to allow for the various ranges of

Revision Number: 10 Revision Date: 07/03/89 MSDS Number: 000201

the components present in the whole product and may not equal 100%.

#### PERCENT/CAS# COMPONENT/REGULATORY LIMITS

100.0 % CHEVRON GST 0il 68

#### CONTAINING

> 99.0 % LUBRICATING BASE OIL

The BASE OIL may be a mixture of any of the following: CAS 64741884, CAS 64741895, CAS 64741964, CAS 64741975, CAS 64742014, CAS 64742525, CAS 64742536, CAS 64742547, CAS 64742627, CAS 64742650, CAS 72623837.

#### < 1.0 % ADDITIVES

TLV - Threshold Limit Value PEL - Permissible Exposure Limit
STEL - Short-term Exposure Limit TPQ - Threshold Planning Quantity
RQ - Reportable Quantity CPS - CUSA Product Code

CC - Chevron Chemical Company - CAS - Chemical Abstract Service Number

#### 10. REGULATORY INFORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE

FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES: 1. Immediate (Acute) Health Effects; NO

Delayed (Chronic) Health Effects; NO

3.

Fire Hazard; NO

Sudden Release of Pressure Hazard; NO
 Reactivity Hazard; NO

WHEN A COMPONENT OF THIS MATERIAL IS SHOWN IN THIS SECTION, THE REGULATORY LIST ON WHICH IT APPEARS IS INDICATED.

#### REGULATORY LISTS:

01=SARA 313 02=MASS RTK 03=NTP Carcinogen 04=CA Prop. 65 05=MI 406 06=IARC Group 1 07=IARC Group 2A 08=IARC Group 2B 09=SARA 302/304 10=PA RTK 12=CERCLA 302.4 11=NJ RTK 15=ACGIH STEL 13=MN RTK 14=ACGIH TLV 16=ACGIH Calculated TLV 17=OSHA PEL 18=OSHA STEL 20=EPA Carcinogen 19=Chevron TLV 21=TSCA SECT 4 23=TSCA SECT 6 RULE 22=TSCA SECT 5 SNUR 24=TSCA SECT 12 EXPORT 25=TSCA SECT 8A CAIR 26=TSCA SECT 8D REPORT 27=TSCA SECT 8E

28=Canadian WHMIS

Revision Number: 10 Revision Date: 07/03/89 MSDS Number: 000201

#### 11. PRODUCT TOXICOLOGY DATA

#### EYE IRRITATION:

NDA. The hazard evaluation was based on data from similar materials.

SKIN IRRITATION:

NDA. The hazard evaluation was based on data from similar materials.

DERMAL TOXICITY:

NDA. The hazard evaluation was based on data from similar materials.

RESPIRATORY/INHALATION:

NDA. The hazard evaluation was based on data from similar materials.

INGESTION:

NDA. The hazard evaluation was based on data from similar materials.

#### 12. ADDITIONAL HEALTH DATA

#### ADDITIONAL HEALTH DATA COMMENT:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils require a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

This product contains petroleum base oils refined by a combination of severe hydrocracking and hydrotreating. The potential of paraffinic base oil prepared by this process to cause cancer has not been specifically addressed by the OSHA Hazard Communication Standard (29 CFR 1910.1200), the International Agency for Research on Cancer (IARC), nor the National Toxicology Program (NTP) Annual Report. However, the process conditions, chemical analyses, and the results of mutagenicity tests all support our opinion that this oil should not cause skin cancer.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since the information contained herein may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 10 Revision Date: 07/03/89 MSDS Number: 000201

National Sanitary Supply Co. P.O. Box 61126 Los Angeles, Ca 90061 (213) 770-1970

3/05/93 2813 TOTONCHY, TALAL 193150

ASH GROVE CEMENT WEST, INC. 13939 N.RIVERGATE BLVD PO BOX 03007 PORTLAND OR 97203

Dear Customer,

Enclosed are the Material Safety Data Sheets (MSDSs) for products that your company recently purchased from National Sanitary Supply as required by the federal OSHA Hazard Communication Final Standard 29 CFR 1910. 1200.

National Sanitary is providing its customers with MSDSs to comply fully with the provisions of OSHA Standard and, by so doing, is attempting to help reduce in number and severity the incidence of chemical source injuries and illnessess in the workplace. It is hoped that by increasing the awareness of all who handle "hazardous" materials, the risk of injury will thereby be reduced. Please make these MSDSs readily available to all employees handling the chemicals.

Additionally, under the Standard, all chemical products are to have labels which are in English, legible and prominently displayed on the container. Please refuse any shipment of products in which the labels have become either disattached or illegible.

This letter and accompanying MSDS (s) were generated by our computer system which has been programmed to automatically print and mail MSDSs upon a customer's initial order of a "hazardous" product and when any updates occur in MSDSs already provided.

If you still have questions regarding the Standard or the intermoretation of information on the MSDS (s) provided, please contact your appropriate sales representative.

Since rely,

Maria F. Frias Executive Administration

NATIONAL SANITARY SUPPLY CO. 13217 S. Figueroa Street Eos Angeles, California 90061 Emergency No. 1-800-535-5053 (INFOTRAC) Call nearest Sales Office for MSDS Information MATERIAL SAFETY DATA SHEET SECTION 1. IDENTIFICATION OF PRODUCT Date Issued: 12/08/89 Supercedes: 11/25/89 National Item#: 4760XX Product Name: HYSHEEN DUST MOP TREATMENT LIQUID SECTION 2. INGREDIENTS CAS NUMBER PERCENT EXPOSURE LIMITS IN AIR OSHA PEL AGGIH TLV 99.7 PETROLEUM DISTILLATES 6474-24-78 100ppm \*NO OSHA EXPOSURE STANDARD HAS BEEN ESTABLISHED FRAGRANCE 3 COLORANT TRACE SECTION 3. PHYSICAL DATA Specific Gravity (Water=1): 0.81 Percent Volatile (By Volume): 99% Evaporation Rate (Bu-Ac =1): 0.03 pH Range: NA Boiling Point (F): 363-488
Vapor Pressure (mm Hg.): 1 a 77 F
Vapor Density (Air=1): 5.7
Solubility in Water: INSOLUBLE
Appearance & Odor: CLEAR RED/ SWEET FIRE AND EXPLOSION HAZARD DATA Section 4. Flash Point (Test Method):(TOC) 168 F AUTOIGNITION TEMPERATURE 500 F Flammable Limits in Air, Volume %: Lower 0.9% Upper 5.4% Extinguishing Media: CD2, DRY CHEMICAL, FOAM, WATER SPRAY Special Fire Fighting Procedures: FOR FIRES INVOLVING THIS MATERIAL, DO NOT ENTER ANY ENCLOSED OR CONFINED FIRE SPACE WITHOUT PROPER PROTECTIVE EQUIPMENT. THIS MAY INCLUDE SELF CONTAINED BREATHING APPARATUS TO PROTECT AGAINST THE HAZARDOUS EFFECTS OF NORMAL PRODUCTS OF COMBUSTION OR OXYGEN DEFICIENCY. SECTION 5. REACTIVITY DATA Stability: STABLE
Incompatibility - Materials to Avoid: MAY REACT WITH STRONG OXIDIZING
MATERIALS.
Hazardous Polymerization: WILL NOT OCCUR
Conditions to Avoid: DO NOT MIX THIS PRODUCT WITH OTHER CHEMICALS.
Hazardous Decomposition Products: NORMAL COMBUSTION FORMS CARBON DIDXIDE
AND WATER VAPOR: INCOMPLETE COMBUSTION MAY PRODUCE CARBON MONOXIDE. SECTION 6. SPILL, LEAK AND DISPOSAL PROCEDURES Spill Response: ELIMINATE ALL OPEN FLAMES IN VICINITY OF SPILL. DIKE
AREA TO CONTAIN SPILL. CLEAN UP AREA USING MOP AND PAIL OR ABSORBENT
MATERIAL. A FIRE OR VAPOR HAZARD MAY EXIST SINCE THIS TYPE OF CLEAN UP
MATERIAL WILL ONLY ABSORB LIQUID; IT WILL NOT ABSORB VAPOR. PLACE ALL
CONTAMINATED MATERIAL IN CLOSED CONTAINERS FOR DISPOSAL. AVOID
CONTAMINATION OF GROUND AND SURFACE WATERS. DO NOT FLUSH TO SEWER. IF
SPILL OCCURS INDOORS, TURN OFF AIR CONDITIONING AND/OR HEATING SYSTEMS, TO
PREVENT VAPORS FROM CONTAMINATING ENTIRE BUILDING.
Product Disposal: RECOVERED LIQUID MAY BE SENT TO A LICENSED
INCINERATION FACILITY. CONTAMINATED MATERIAL MUST BE DISPOSED OF IN A
PERMITTED WASTE MANAGEMENT FACILITY. CONSULT FEDERAL, STATE, OR LOCAL
DISPOSAL AUTHORITIES FOR APPROVED PROCEDURES.
Container Disposal: DISPOSE OF ACCORDING TO LOCAL REGULATIONS. 778410 ii Odv

December 22, 1989

E. J. Bartells 700 Powell Avenue S. W. Renton, WA 98055

TO WHOM IT MAY CONCERN:

In answer to your request for safety data sheet (MSDS) on Ideal Tape product #371Z:

Under Section #1, Chapter 470 of the Acts of 1983 "Toxic or Hazardous Substance, defined as, any chemical substance or mixture of substances in a gaseous, liquid or solid state which is listed in the Massachusetts substance list compiled in compliance with the provisions of section four, and which is manufactured, processed, used or stored, in the workplace, but which shall not include alcoholic beverages as defined in section one of Chapter 138 of the General laws or articles intended for personal consumption by employees in the workplace, or consumer articles packaged for distribution to and used by, the general public, or articles sold or used in retail food establishments and all other retail trade establishments exclusive of articles used in processing and repair areas, or substances being transported in interstate commerce."

Since each Ideal Tape HVAC Product is a finished product and an article packaged for distribution to and used by the general public, an MSDS is not required.

Further, "Articles manufactured into specific shape or design for a particular end use function and which will not release or otherwise result in exposure to hazardous chemical under normal condition of use" are exempt from the OSHA Hazard Communication Act.

If you wish further information, or have additional questions, please call me.

Sincerely,

IDEAL TAPE CO.

Gene Goldstein

Director, Sales & Marketing

REPORT NUMBER: 971 VAN WATERS & ROGERS INC.
MSDS NO: P1689 MATERIAL SAFETY DATA SHEET

PAGE: 001

ERSION: 004 UREABOR

EFFECTIVE DATE: 01/10/90

ORDER NO: PROD NO :

UNKNOWN

VAN WATERS & ROGERS , SUBSIDIARY OF UNIVAR (408)435-8700 1600 NORTON BUILDING , SEATTLE , WA 98104 -----EMERGENCY ASSISTANCE -------FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL - CHEMTREC (800)424-9300 ----- FOR PRODUCT AND SALES INFORMATION ------CONTACT YOUR LOCAL VAN WATERS & ROGERS BRANCH OFFICE AT VW&R PORTLAND OFFICE 503-222-1721 PORTLAND , OR -----PRODUCT IDENTIFICATION--------PRODUCT NAME: UREABOR CAS NO.: MIXTURE VW&R CODE: P1689 COMMON NAMES/SYNONYMS: MIXTURE OF SODIUM CHLORATE, SODIUM METABORATE, AND BROMACIL FORMULA: MIXTURE DATE ISSUED: 08/89 HAZARD RATING (NFPA 704) SUPERCEDES: 07/86 HEALTH: 0 HAZARD RATING SCALE: FIRE:0 O=MINIMAL 3=SERIOUS REACTIVITY:1 1=SLIGHT 4=SEVERE SPECIAL: NONE 2=MODERATE EXPOSURE LIMITS, PPM OSHA ACGIH OTHER HAZARD COMPONENT CAS NO. X PEL TLV LIMIT SUDIUM CHLORATE 7775-09-9 30 NONE NONE NONE OXIDIZER SODIUM METABORATE7775-19-1 66.5 NONE NONE NONE

LING POINT, DEG F: N/A VAPOR PRESSURE, MM HG/20 DEG C: N/A MELTING POINT, DEG F: N/A VAPOR DENSITY (AIR=1): N/A SPECIFIC GRAVITY (WATER=1): 54 LBS./FT.3 WATER SOLUBILITY, %: >25 APPEARANCE AND ODOR: EVAPORATION RATE (BUTYL ACETATE=1): N/A OFF-WHITE SOLID; ODORLESS

-----PHYSICAL PROPERTIES--------

UNKNOWN 1.5 NONE NONE NONE

7. 138 - 1 - 48 -

and Alberta and the community of the com

大学権、対し、日本には1992年の大学に関係している。 1994年では、1994年では、1994年の1992年の1994年の19

「TO CONTINUE OF COME OF THE STATE OF THE S

 $\Phi_{ij} = \{ i, j \in \mathbb{N}^{d} \mid i \in \mathbb{N} : i \in \mathbb{N} \mid j \in \mathbb{N} \}$ 

The AND Community of the Community States of the Community of the Communit

Burgaria (1971) De ambiguero comencia. Burgaria (1978) Maria (1988) Propinsi (1971) Burgaria (1971) Propinsi (1971) Propinsi (1971) Propinsi (1971) Burgaria (1971) Propinsi (1971) Propinsi (1971) Propinsi (1971) Propinsi (1971) Propinsi (1971) Propinsi (1971)

Mr. Toll of a roll of the hold of the same a re-

· San Market America, de la Elevera de La Elevera de La Campanha 
(a) An analysis of the second of the entropy of the property of the entropy of

· Address · Andrew Control of Manager · Andrew Control of the Manager · Andrew Address · Andrew Address · Andrew Address · Andrew Address · Andrew Address · Andrew Address · Andrew Address · Andrew Address · Andrew Address · Andrew Address · Andrew Address · Andrew Address · Andrew Address · Andrew Address · Andrew

and the second of the second o

 $(m_{\rm sol} = 1)^{m_{\rm sol}} (1) = \frac{1}{m_{\rm sol}} \left( \frac{m_{\rm sol}}{m_{\rm sol}} \right) = \frac{1}{m_{\rm sol}} \left( \frac{m_{\rm sol}}{m_{\rm sol}}$ 

AND SHOULD BE A STATE OF THE ST

REPORT NUMBER: 971 MSUS NO: P1689

DERMAL: RABBIT LD50 > 10 G/KG

INHALATION: NO DATA FOUND

VAN WATERS & ROGERS INC. MATERIAL SAFETY BATA SHEET PAGE: 002

VERSION: QQ4 UREABOR EFFECTIVE DATE: 01/10/90 ORDER NO: PROD NO : IF INMALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING, GET IMMEDIATE MEDICAL ATTENTION. IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 15 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION. IN CASE OF SKIN CONTACT: IMMEDIATELY WASH SKIN WITH LOTS OF SOAP AND WATER. REMOVE CONTAMINATED CLOTHING AND SHOES; WASH BEFORE REUSE. GET MEDICAL ATTENTION IF IRRITATION PERSISTS AFTER WASHING. IF SUALLOWED: IF CONSCIOUS, IMMEDIATELY INDUCE VOMITING BY GIVING 2 GLASSES OF WATER AND STICKING A FINGER DOWN THE THROAT. GET IMMEDIATE MEDICAL ATTENTION. OD NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS TO CONVUESING PERSON. ----HEALTH HAZARU INFORMATION-----PRIMARY ROUTES OF EXPOSURE: SKIN OR EYE CONTACT SIGNS AND SYMPTOMS OF EXPOSURE INHALATION: IRRITATES THE MUCOUS MEMBRANES AND POSSIBLE ULCERATION OF NASAL SEPTUM. EYE CONTACT: DUSTS MAY IRRITATE THE EYES. SKIN CONTACT: PROLONGED OR REPEATED CONTACT WITH THE DUST MAY IRRITATE THE SKIN. SWALLOWED: SWALLOWING THE DUSTS OR SOLIDS MAY CAUSE NAUSEA AND VOMITING, SWALLOWING LARGE QUANTITIES MAY BE FATAL WITH SYMPTOMS OF GASTRITIS. CHRONIC EFFECTS OF EXPOSURE: MAY CAUSE METHEMOGLOBINEMIA AND A LATE TOXIC NEPHRITIS. MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE REPORTED. ----TOXICITY DATA----L: RAT L050 = 2330 MG/KG

Appendix33-000636

REPORT NUMBER: 971 MSDS NO: P1689

#### VAN WATERS & ROGERS INC. MATERIAL SAFETY DATA SHEET

PAGE: 003

Ų /				
VER	SI	ON	i	004

4 UREABOR

EFFECTIVE DATE: 01/10/90

ORDER NO: PROD NO:

CARCINOGENICITY: THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

OTHER DATA: NONE

PROTECTION----

VENTILATION: LOCAL MECHANICAL EXHAUST VENTILATION CAPABLE OF MINIMIZING DUST EMISSIONS AT THE POINT OF USE.

RESPIRATORY PROTECTION: IF USE CONDITIONS GENERATE DUSTS, WEAR A NIOSH-APPROVED RESPIRATOR APPROPRIATE FOR THOSE EMISSION LEVELS. APPROPRIATE RESPIRATORS MAY BE A FULL FACEPIECE OR A HALF MASK AIR-PURIFYING CART-RIDGE RESPIRATOR WITH PARTICULATE FILTERS, A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE, OR A SUPPLIED-AIR RESPIRATOR.

PROTECTION: CHEMICAL GOGGLES UNLESS A FULL FACEPIECE RESPIRATOR IS ALSO WORN. IT IS GENERALLY RECOGNIZED THAT CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH CHEMICALS BECAUSE CONTACT LENSES MAY CONTRIBUTE TO THE SEVERITY OF AN EYE INJURY.

PROTECTIVE CLOTHING: LONG-SLEEVED SHIRT, TROUSERS, SAFETY SHOES, RUBBER GLOVES, AND RUBBER APRON.

OTHER PROTECTIVE MEASURES: AN EYEWASH AND SAFETY SHOWER SHOULD BE NEARBY AND READY FOR USE.

-----FIRE AND EXPLOSION INFORMATION-----

FLASH POINT, DEG F:NONE
METHOD USED:N/A

FLAMMABLE LIMITS IN AIR, % LOWER: N/A UPPER: N/A

EXTINGUISHING MEDIA: FLOOD WITH WATER. SODIUM CHLORATE SUPPLIES ITS OWN OXYGEN SO SMOTHERING-TYPE FIRE EXTINGUISHERS ARE INEFFECTIVE.

SPECIAL FIRE FIGHTING PROCEDURES: FIRE FIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING. USE WATER SPRAY TO COOL NEARBY CONTAINERS AND STRUCTURES EXPOSED TO FIRE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: THIS PRODUCT MAY CAUSE A FIRE IF IT DRYS ON CLOTHING, WOOD, OR OTHER COMBUSTIBLES. CONTACT WITH FLAMMABLE LIQUIDS OR VAPORS MAY CAUSE IMMEDIATE FIRE OR EXPLOSION, ESPECIALLY IF TED, OR IT MAY RESULT IN A DELAYED EXPLOSION.

-----HAZARDOUS REACTIVITY------

STABILITY: STABLE

POLYMERIZATION: WILL NOT OCCUR

 $(q_{ij}, \ldots, q_{ij}) = q_{ij}$ 

HAMME BOLL A LIKE OF THE PORT THE REAL PROPERTY.

and the first of the second of

in the entropy of the South of Administration of the entropy of a graph control of the entropy o

en la companya de la companya de la companya de la companya de la companya de la companya de la companya de la

(4) 10 (1) 11 (1) 11 (1) 12 (1) 12 (1) 12 (1) 13 (1

and the state of t

A Section of the Property of the section of the sec

(a) The control of the control of

grade in the address of war are also be a re-

The state of the s

EPORT NUMBER: 971 SDS NO: P1689

#### VAN WATERS & ROGERS INC. MATERIAL SAFFTY DATA SHEFT MATERIAL SAFETY DATA SHEET

PAGE: 004

ERSION: 004 UREABOR

EFFECTIVE DATE: 01/10/90

ORDER NO: PROD NO :

ONDITIONS TO AVOID: EXCESSIVE HEAT

ATERIALS TO AVOID: ACIDS, ORGANICS, SULFUR, AND SULFIDES, POWDERED ETALS, PHOSPHOROUS, AND AMMONTUM COMPOUNDS.

AZARDOUS DECOMPOSITION PRODUCTS: OXYGEN AND UNSTABLE CHLORINE DIOXIDE HICH DECOMPOSES SPONTANEOUSLY TO CHLORINE.

-----SPILL, LEAK, AND DISPOSAL PROCEDURES-----

CTION TO TAKE FOR SPILLS OR LEAKS: WEAR PROTECTIVE EQUIPMENT INCLUDING UBBER BOOTS, RUBBER GLOVES, RUBBER APRON, AND A FULL FACEPIECE OR A ALF MASK AIR-PURIFYING CARTRIDGE RESPIRATOR WITH PARTICULATE FILTERS. EAR CHEMICAL GOGGLES IF A HALF MASK IS WORN. FOR SMALL SPILLS, SWEEP IP AND DISPOSE OF IN DOT-APPROVED WASTE CONTAINERS. FOR LARGE SPILLS, MOVEL INTO DOT-APPROVED WASTE CONTAINERS. KEEP OUT OF SEWERS, STORM RAINS, SURFACE WATERS, AND SOIL.

IMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING. J HANDLING AND DISPOSAL OF WASTE.

DISPOSAL METHODS: DISPOSE OF CONTAMINATED PRODUCT AND MATERIALS USED IN CLEANING UP SPILES OR LEAKS IN A MANNER APPROVED FOR THIS MATERIAL. CONSULT APPROPRIATE FEDERAL. STATE AND LOCAL REGULATORY AGENCIES TO ASCERTAIN PROPER DISPOSAL PROCEDURES.

POTE: EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE BUBLECT TO PROPER WASTE DISPOSAL, AS ABOVE.

STORAGE AND HANDLING PRECAUTIONS: STORE IN A COOL, DRY, WELL-VENTILATED PLACE. STORE AWAY FROM ALL OTHER CHEMICALS AND POTENTIAL SOURCES OF CONTAMINATION, KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. DO NOT ISE PRESSURE TO EMPTY CONTAINER. WASH THOROUGHLY AFTER HANDLING. DO YOT GET IN EYES, ON SKIN, OR ON CLOTHING. KEEP BAGS DRY AT ALL TIMES. JO NOT STORE ON WOODEN FLOORS.

REPAIR AND MAINTENANCE PRECAUTIONS: NONE.

ITHER PRECAUTIONS: CONTAINERS, EVEN THOSE THAT HAVE SEEN EMPTIED, WILL RETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS OBEY HAZARD WARNINGS AND HANDLE EMPTY CONTAINERS AS IF THEY WERE FULL.

The second section will be second as the second and 86: ADDED COMPONENT CAS NUMBERS. EXPANDED RESPIRATORY AND EYE PROTECTION, FIRE FIGHTING PROCEDURES, SPILL AND LEAK PROCEDURES, AND HANDLING ADVICE.

REPORT NUMBER: 971 MSDS NO: P1689 VAN WATERS & ROGERS INC. MATERIAL SAFETY DATA SHEET PAGE: 005

VERSION: 004 UREABOR EFFECTIVE DATE: 01/10/90 ORDER NO: PROD NO : 08/89: CHANGED HEADING AND CONTACT INFORMATION. -----FOR AUDITIONAL INFORMATION ------CONTACT: MSDS COORDINATOR VW&R PORTLAND OFFICE DURING BUSINESS HOURS, PACIFIC TIME (408)435-8700 03/28/91 10:57 PRODUCT: CUST NO: ORDER NO: ----NOTICE \*\* VAN WATERS & ROGERS INC. ("VW&R") EXPRESSLY DISCLAIMS ALL EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, TH RESPECT TO THE PRODUCT OR INFORMATION PROVIDED HEREIN. \*\*

ALL INFORMATION APPEARING HEREIN IS BASED UPON DATA OBTAINED FROM THE MANUFACTURER AND/OR RECOGNIZED TECHNICAL SOURCES. WHILE THE INFORMATION IS BELIEVED TO BE ACCURATE, VWAR MAKES NO REPRESENTATIONS AS TO ITS ACCURACY OR SUFFICIENCY. CONDITIONS OF USE ARE BEYOND VWARS CONTROL AND THEREFORE USERS ARE RESPONSIBLE TO VERIFY THIS DATA UNDER THEIR OWN OPERATING CONDITIONS TO DETERMINE WHETHER THE PRODUCT IS SUITABLE FOR THEIR PARTICULAR PURPOSES AND THEY ASSUME ALL RISKS OF THEIR USE, HANDLING, AND DISPOSAL OF THE PRODUCT, OR FROM THE PUBLICATION OR USE OF, OR RELIANCE UPON, INFORMATION CONTAINED HEREIN. THIS INFORMATION RELATES ONLY TO THE PRODUCT DESIGNATED HEREIN, AND DOES NOT RELATE TO ITS USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY OTHER PROCESS.

\* \* \* END OF MSDS \* \* \*

### ASH GROVE CEMENT COMPANY



WESTERN REGION 13939 NORTH RIVERGATE BLVD., P.O. BOX 83007 PORTLAND, OREGON 97283-0007 PHONE 503-286-1677

# MATERIAL SAFETY DATA SHEET FOR PORTLAND CEMENT

JANUARY 1990

#### Section 1-Identity

Manufacturer's name and address: Ash Grove Cement Company

3801 E. Marginal Way South Seattle, Washington 98134

Emergency Telephone Number: (503)286-1677

Chemical Name and Synonyms: Portland Cement (CAS #65997-15-1)

Trade Name and Synonyms: Ash Grove Portland Cement Type II

#### Section II-Chemical Data

Chemical Family: Calcium Salts

**Formula:** Portland cement consists of finely ground portland cement clinker mixed with a small amount of calcium sulfate to control set. Portland cement clinker is a sintered material produced by heating to high temperature (greater than 1200 degrees celsius) a mixture of substances such as limestone and shale from the earth's crust. The substances manufactured are essentially hydraulic calcium silicates contained in a crystalline mass, not separable into the individual components.

Substances similar to the following are known to be present in portland cement:

3Ca0.Si02	(CAS #12168-85-3)
2Ca0.Si02	(CAS #10034-77-2)
3Ca0,A1203	(CAS #12042-78-3)
4Ca0.A1203.Fe203	(CAS #12068-35-8)
CaS04.XH20	(CAS #13397-24-5)

Small amounts of Ca0, Mg0, K2s04, Na2So4 may also be present.

#### Section III-Hazardous Ingredients

Ingredients: Portland cements are listed by OSHA in 29 CFR 1910.1000. Table Z-1-A, and require material safety data sheets (FR. January 19, 1989). MSHA (30 CFR 55.5.-1, Ref. 2, ACGIH TLV's for 1973, Appendix E) and ACGIH (TLV's for 1984-5, Appendix D) list portland cements as nuisance dusts. Portland cements are NOT listed by NTP. IARC, OR OSHA as carcinogens. However, since portland cement is manufactured from raw materials mined from the earth (limestone, marl, sand shale, clay, etc.) and process heat is provided by burning fossil fuels, trace, but detectable, amounts of naturally occurring, and possibly harmful, elements may be found during chemical analysis. Under ASTM standards, portland cement may contain .75 percent insoluble residue. A fraction of these residues may be free crystalline silica.

#### Section IV-Physical Data

**Boiling Point:** Not applicable, portland cement is a powdered solid.

Vapor Pressure: Not applicable, portland cement is a powdered solid.

Vapor Density: Not applicable, portland cement is a powdered solid.

Solubility in Water: Slight (0.1-1.0%)

Specific Gravity: (H20=1) 3.15

**Evaporation Rate:** Not applicable, portland cement is a powdered solid.

Appearance and Odor: Gray or white powder; no odor.

Melting Point: Not applicable.

#### Section V-Fire and Explosion Hazard Data

Flash Point: Portland cements are non combustible and not explosive.

Flammable or Explosive Limits: Not applicable.

Extinguishing Media: Not applicable.

Special Fire fighting Procedures: Not applicable.

Unusual Fire and Explosion Hazards: Nonc.

Lower Explosive Limit: Not applicable.

Upper Explosive Limit: Not applicable.

#### Section VI-Health Hazard Data

ACGIH Threshold Limit Value (1988-89): Total dust containing no

asbestos and less than 1%

silica - 10mg/m3

OSHA PEL (Transitional): Total dust-50 million

particles/ft3

**OSHA PEL (Final):** Total dust-10 mg/m<sup>3</sup>

Respirable Dust-5 mg/m3

#### Effects of Overexposure:

Acute: Wet cement, especially as an ingredient in plastic (unhardened) concrete, mortar or

slurries, can dry the skin and cause caustic burns. Direct contact with the eyes can

cause irritation. Inhalation can irritate the upper respiratory system.

Chronic: Cement dust can cause inflammation of the lining tissure of the interior of the nose

and inflammation of the cornea. Hypersensitive individuals may develop an allergic dermatitis. Cement may contain trace (less than 0.05%) amounts of chromium salts or compounds including hexavalent chromium, or other metals found to be hazardous

or toxic in some chemical forms. These metals are mostly present as trace

substitutions within the principal minerals.

**Emergency and First Aid Procedures:** Irrigate eyes immediately and repeatedly with water and get prompt medical attention. Wash exposed skin areas with soap and water. Apply sterile dressings. If ingested, consult a physician immediately. Drink water.

#### Section VII-Reactivity Data

Stability: Product is stable. Keep dry until used.

Incompatibility: Aluminum powder and other alkali and alkaline earth elements will react in wet mortar

or concrete, liberating hydrogen gas.

**Hazardous Decomposition Products:** None.

Hazardous Polymerization: Will not occur.

#### Section VIII-Spill Procedures

Steps to be taken in case material is spilled: Use dry clean up methods that do not disperse the dust into the air. Avoid breathing the dust. Emergency procedures are not required.

**Disposal Method:** Small amounts of material can be disposed of as common waste or returned to the container for later use if it is not contaminated. Large volumes may require special handling.

#### Section IX-Special Protection Information

**Respiratory Protection:** In dusty environments, the use of a MSHA/NIOSH-approved respirator is recommended.

Ventilation: Local exhaust can be used to control airborne dust levels.

**Eye Protection:** Use tight fitting goggles in dusty environments.

Skin Protection: Use barrier creams, impervious, abrasion-and alkali resistant gloves, boots and protective clothing to protect the skin from prolonged contact with wet cement in plastic concrete, mortar or slurries. Immediately after working with cement or cement-containing materials, workers should shower with soap and water. Precautions must be taken. Cement burns with little warning-little heat is sensed.

#### Section X-Abbreviations

ACGIH	American conference of Governmental industrial Hygienists
ASTM	American Society for Testing and Materials
CAS	Chemical Abstract Service
CFR	Code of Federal Regulations
ft3	Cubic Foot
IARC	International Agency for Research on Cancer
m3	Cubic meter
mg	Milligram
MSHA	Mine Safety and Health Administration
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
TLV's	Thershold Limit Values

Note: This material safety data sheet attempts to describe as accurately as possible the potential exposures associated with normal cement use. Health and safety precautions in this data sheet may not be adequate for all individuals and/or situations. Users have the responsibility to evaluate and use this product safely and to comply with all applicable laws and regulations.

HOUGHTON INTERNATIONAL INC. P.O. BOX 930 VALLEY FORGE, PA. 19482

PAGE: 1

Rev Date: 020190 Material Safety Data Sheet

v21130

HOUGHTO-SAFE 1130

SECTION I - PRODUCT IDENTIFICATION

PRODUCT NAME: HOUGHTO-SAFE 1130

PROPER SHIPPING NAME: HYDRAULIC SYSTEMS FLUID, OTHER THAN PETROLEUM

HAZARD CLASS: NON-HAZARDOUS

HAZARD ID NO: N/A

COMPLETED BY: Robert E. Williams

PHONE NUMBER: (215) 666-4105

24-HR EMERGENCY:

(800) 424-9300

SECTION II - HAZARDOUS COMPONENTS

MATERIAL

CAS NO % BY WT. HAZARD

INGREDIENTS NOT CONSIDERED HAZARDOUS ACCORDING TO CURRENT OSHA REGULATIONS CONTAINS NO CRESYL PHOSPHATE

SECTION III - PHYSICAL DATA

BOIL. PT. (DEG F): 400-500

\POR PRESSURE (MM HG) 0.025; (@150 D EVAP RATE: VERY LOW

SPECIFIC GRAVITY: 1.12

WAPOR DENSITY (AIR = 1) >10

PERCENT VOLATILE: NIL

SOL IN WATER: INSOLUBLE

PH NEAT: N/A PH AT %:

APPEARANCE AND ODOR:

GREEN FLUID, BLAND ODOR

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT, DEG. F (METHOD USED): 470 C.O.C.

LEL: UEL:

HMIS AND NFPA

HEALTH: 1 FIRE: 1 REACTIVITY: 0

EXTINGUISHING MEDIA:

WATER FOG, CARBON DIOXIDE, FOAM, DRY CHEMICAL; MATERIAL IS A FIRE RESISTANT FLUID; WILL BURN AT HIGH TEMPERATURES

SPECIAL FIRE FIGHTING INSTRUCTIONS:

FULL PROTECTIVE CLOTHING, SELF-CONTANED BREATHING APPARATUS

UNUSUAL FIRE AND EXPLOSION HAZARDS:

FIRE AND EXPLOSIVE HAZARD SLIGHT

SECTION V - HEALTH HAZARD INFORMATION

THRESHOLD LIMIT VALUE: NONE ESTABLISHED FOR PRODUCT PERMISSIBLE EXPOSURE LIMIT: NONE ESTABLISHED FOR PRODUCT

ROUTES OF EXPOSURE

CHRONIC (RECURRENT) EFFECTS: UNKNOWN FOR THIS PRODUCT.

Continued on page 2

### SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION:

SELF-CONTAINED UNIT IF EXPOSED TO MISTING IN HIGH TEMP. USE.

VENTILATION:

USE IN WELL VENTILATED AREAS

PROTECTIVE GLOVES:

RUBBER GLOVES RECOMMENDED FOR PROLONGED CONTACT

EYE PROTECTION:

CHEMICAL SAFETY GOGGLES REQUIRED

OTHER PROTECTIVE EQUIPMENT:

FULL PROTECTIVE CLOTHING IF EXPOSED TO SPLASHING OF SPRAYING.

### SECTION IX - SPECIAL PRECAUTIONS

STORAGE AND HANDLING CONDITIONS:

PROTECT CONTAINERS AGAINST PHYSICAL DAMAGE. STORE IN WELL VENTILATED AREAS.

### ADDITIONAL PRODUCT INFORMATION

CARCINOGENS AS DEFINED BY - NTP: NONE IARC: NONE OSHA: NONE.

CERCLA REPORTABLE QUANTITY (LBS) : NONE

RA HAZARDOUS WASTE NUMBER : N/A

SARA TITLE III, SECTION 313

THIS PRODUCT CONTAINS NO TOXIC CHEMICAL SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372.

<sup>&</sup>quot;OUGHTO-SAFE is a registered trademark of Houghton International Inc

#### ACUTE EFFECTS:

INHALATION:

MAY BE IRRITATING TO MUCOUS MEMBRANES, ESPECIALLY IF USED AT HIGH TEMPERATURES; MISTING MAY OCCUR

SKIN:

MILD IRRITANT

EYE:

MILD IRRITANT

INGESTION:

NO SERIOUS EFFECTS KNOWN. PROHIBIT FOOD HANDLING IN OPERATING AREA.

\*\*\*\*\*\* FIRST AID \*\*\*\*\*\*\*

INHALATION:

REMOVE TO SOURCE OF FRESH AIR.

SKIN:

WASH WITH SOAP AND WATER.

EYE:

FLUSH WITH WATER 15 MINUTES, CONSULT PHYSICIAN

INGESTION:

INDUCE VOMITING, CONSULT PHYSICIAN

\*\*\* MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE \*\*\*

NONE KNOWN

### SECTION VI - REACTIVITY DATA

STABILITY: STABLE: [X] UNSTABLE: [ ]

INCOMPATABILITY (MATERIALS TO AVOID):

STRONG OXIDIZERS

HAZARDOUS DECOMPOSITION PRODUCTS:

FIRE CONDITIONS - OXIDES OF CARBON AND PHOSPHORUS

HAZARDOUS POLYMERIZATION: MAY OCCUR: [ ] WILL NOT OCCUR: [X]

### SECTION VII - SPILL OR LEAK PROCEDURES

POTENTIAL AS A POLLUTANT:

MATERIAL IS NOT CONSIDERED A POLLUTANT IF EFFECTIVE WASTE DISPOSAL METHODS ARE UTILIZED. MATERIAL IS NOT SIGNIFICANTLY BIODEGRADABLE.

SPILL, LEAK OR RELEASE:

DIKE TO CONTAIN SPILL; SOAK UP WITH EQUAL AMOUNTS OF SAND AND POWDERED LIMESTONE OR ANY COMMERCIAL OIL ABSORBENT. TRANSFER TO SUITABLE CONTAINERS. KEEP OUT OF STREAMS AND SEWERS.

WASTE DISPOSAL:

BURN IN FURNACE WITH AFTERBURNER AND SCRUBBER IN ACCORDANCE WITH PERTINENT REGULATIONS. (NOTE: PRODUCT IS HEAVIER THAN WATER.)

Continued on page 3



### MATERIAL SAFETY DATA SHEET

#### AND SAFE HANDLING AND DISPOSAL INFORMATION

08/06/91 PAGE 1 OF 3

ZEP MANUFACTURING COMPANY

SUPERSEDES: 06/15/88

155UE DATE: 09/21/90 ZEP FORMULA 940

PRODUCT NUMBER : 0472 MINTER

**PST IN MAINTENANCE PRODUCTS** 

SECTION I - E M E R G E N C Y C O N T A C T S

P.O. BOX 2015

ZEP MANUFACTURING COMPANY TELEPHONE: (404)352-1680 BETWEEN 8:00 AM-5:00 PM (EST) NON-OFFICE HOURS, WEEKENDS, AND HOLIDAYS: AREA CODE 404

435-2973, 996-0899, 351-2952, 971-3367, 432-2873

LOCAL POISON CONTROL CENTER .......

ATLAMTA: GEORGIA 30301

TWANSFORTATION EMERGENCY: CHEMTREC: TOLL FREE 1-800-424-9300 ALL CALLS RECORDED

DISTRICT OF COLUMBIA (202)483-7616 ALL CALLS RECORDED

SECTION II - H A Z A R D O U S I N G R E D I E N T S

TLV EFFECTS DESIGNATIONS

% IN (PPM) (SEE REVERSE) PROD.

\*\* SODIUM METASILICATE \*\* SILICIC ACID (H2-SI-O3) DI- N/D SODIUM SALT: WATER GLASS: CAS# 4834-92-0: RTECS#

VV9275000; OSHA DUST LIMIT-2MG/M3 (FOR POWDERS ONLY).

€ 5 N/D EIR

\*\* NONYLPHEMOXYPOLY(ETHYLENEOXY)ETHANOL \*\* POLY(OXY-1,2-ETHANEDIYL), ALPHA-(NONYLPHENYL)-OMEGA-

HYDROXY: CAS# 9016-45-9: RTECS# MD0900000: OSHA PEL-N/O

\*\* SODIUM LINEAR ALKYL NAPHTHALENE SULFONATE \*\* CAS# N/D

IRR

C 5

5-10

PROPRIETARY: OSHA PEL-N/D

\*\* POTASSIUM DODECYLBENZENE SULFONATE \*\* LINEAR ALKYL N/D ARYL SULFONATE: CAS# E7177-77-1: RTECS# MOME

OSHA PEL N/D

SPECIAL NOTE: ADVERSE HEALTH EFFECTS WOULD NOT BE EXPECTED UNDER RECOMMENDED CONDITIONS OF USE SO LONG AS PRESCRIBED SAFETY PRECAUTIONS ARE PRACTICED.

SECTION III - H E A L T H H A Z A R D DATA

ACUTE EFFECTS OF OVEREXPOSURE:

CONCENTRATE MAY BE CORROSIVE TO EYES AND MUCUS MEMBRANES AND SOLUTIONS ARE SEVERE EYE IRRITANTS. EYE CONTACT MAY RESULT IN CORNEAL DAMAGE OR BLINDNESS. SKIN CONTACT MAY PRODUCE IRRITATION DEPENDING ON LENGTH OF CONTACT TIME.

MALATION MAY PRODUCE UPPER RESPIRATORY IRRITATION CHARACTERIZED BY SORE THROAT OR DIMPLOULTY IN BREATHING.

INGREDIENTE THIS PRODUCT MAY AGGRAVATE EXISTING SKIN, EYE, OR RESPIRATORY DISCRDERS.

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

#### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen—Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only—Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL: Flammable—At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic—The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion—A primary route of exposure through swallowing a liquid or solid (see below).

INH: Inhalation—A primary route of exposure through breathing of vapors (see below).

IRR: Irritant—Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable—Category is not appropriate for this product.

N/D: Not Determined—Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer—Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value—A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic—The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time-weighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. AlL Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, If you have any questions.

#### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which is we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all a conditions under which this information and our products, or the products of other manufacturers in combination and our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improducts and advisoring products, from incompatible product combinations, or from the tailure to follow instructions, warnings and advisoring the product's label and Material Safety Data Sheet.



# **MATERIAL SAFETY DATA SHEET**

#### AND SAFE HANDLING AND DISPOSAL INFORMATION

ISSUE DATE: 03/21/90 ZEP FORMULA 940

SUPERSEDES: 04/15/88 FRODUCT: NUMBER 100472 DELICATION

SECTION III - HEALTH HAZARD DATA (CONTINUED)

CHRONIC EFFECTS OF OVEREXPOSURE:

REPEATED OR PROLONGED SKIN CONTACT MAY PRODUCE CHRONIC INFLAMMATION OR DERMATIT-IS. CHARACTERIZED BY REDNESS, SCALING, OR ITCHING. REPEATED EYE EXPOSURE MAY

PRODUCE CHRONIC INFLAMMATION OF THE EYE OR CORNEAL DAMAGE.

NONE OF THE INGREDIENTS ARE LISTED AS CARCINOGENS BY IARC, NTP, OR OSHA.

EST'D PEL/TLV: NOT ESTABLISHED PRIMARY ROUTES OF ENTRY: N/A

HMIS CODES: HEALTH 3: FLAM. 0: REACT. 0: PERS. PROTECT. B : CHRONIC HAZ. NO

FIRST AID PROCEDURES:

SKIN : IMMEDIATELY FLUSH CONTAMINATED SKIN WITH PLENTY OF WATER FOR AT LEAST 15

MINUTES. GET MEDICAL ATTENTION IF IRRITATION DEVELOPS.

EYES : IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, OC-

CASIONALLY LIFTING UPPER AND LOWER LIDS. GET MEDICAL ATTENTION AT ONCE.

INHALE: MOVE EXPOSED PERSON TO FRESH AIR. IF IRRITATION PERSISTS,

GET MEDICAL ATTENTION PROMPTLY.

MGEST: IF THIS PRODUCT IS SWALLOWED, DO NOT INDUCE VOMITING. IF VICTIM IS

CONSCIOUS GIVE PLENTY OF WATER TO DRINK. GET MEDICAL ATTENTION AT ONCE. 

SECTION IV - S P E C I A L P R O T E C T I O N I N F O R M A T I O N

PROTECTIVE CLOTHING : WEAR NEOPRENE, NITRILE, OR NATURAL RUBBER GLOVES OR

GLOVES WITH PROVEN RESISTANCE TO THE INGREDIENTS LISTED.

( )

EVE PROTECTION : WEAR SPLASH-PROOF SAFETY GOGGLES ESPECIALLY IF CONTACT

LENSES ARE WORM.

RESPIRATORY PROTECTION: KEEP FACE AWAY FROM SPRAY MIST AND DO NOT BREATHE

VAPORS.

VENTILATION : VENTILATION SHOULD BE EQUIVALENT TO OUTDOORS. USE EX-

HAUST FAMS AND OPEN WINDOWS IN ENCLOSED SPACES.

SECTION V - P H Y S I C A L D A T A

SOILING POINT (F) : APP. 220F SPECIFIC GRAVITY

PERCENT VOLATILE BY VOLUME (%) : 67 VAPOR PRESSURE(MMHG): M/D VAPOR DENSITY(AIR=1): M/D =i): i.O

EVAPORATION RATE(WATER SOLUBILITY IN WATER : COMPLETE : 13.0-13.3 PH(CONCENTRATE)

): 11.2-11.5 PHIUSE DILUTION OF 1:100

APPEARANCE AND ODOR : CLEAR, THIN, AMBER LIQUID WITH FAINT ODOR.

SECTION VI - FIRE AND EXPLOSION DATA

ASH POINT(F) (METHOD USED): N/A

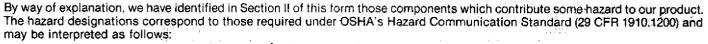
FTAMMABLE LIMITS LEL N/A UEL N/A EXTINGUISHING MEDIA : NOT COMBUSTIBLE.

SPECIAL FIRE FIGHTING: NOME

O Tally and A

UNUSUAL FIRE HAZAROS : MAY DECOMPOSE TO FORM TOXIC/CORROSIVE GASES

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.



#### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen—Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only—Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL: Flammable—At temperatures under 100°F., chemical gives off enough vapor to Ignite if a source of ignition is present.

HTX: Highly Toxic--The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion—A primary route of exposure through swallowing a liquid or solid (see below).

INH: Inhalation—A primary route of exposure through breathing of vapors (see below).

IRR: Irritant—Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable—Category is not appropriate for this product.

N/D: Not Determined—Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer -- Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value—A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic—The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time weighted average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that hearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, frame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to-proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

#### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the impropertuse or handling of our products, from incompatible oreduct combinations, or from the fallure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet



ZEP MANUFACTURING COMPANY

"ST IN MAINTENANCE PRODUCTS

# MATERIAL SAFETY DATA SHEET

#### AND SAFE HANDLING AND DISPOSAL INFORMATION

ISSUE DATE: 03/21/90 ZEP FORMULA SAO

SUPERSEDES: 06/15/88 PRODUCT NUMBER 04/2

SECTION VII - REACTIVITY DATA

STABILITY

: STABLE

INCOMPATIBILITY(AVOID) : STRONG OXIDIZING AGENTS

POLYMERIZATION : WILL NOT OCCUR.

HAZARDOUS DECOMPOSITION: CARBON DIOXIDE, CARBON MONOXIDE AND TOXIC/CORROSIVE

FUMES AS OXIDES OF PHOSPHOROUS.

SECTION VIII - S P I L L A M D DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: OBSERVE SAFETY PRECAUTIONS IN SECTIONS 4 & 9 DURING CLEAN-UP. ABSORB SPILL ON AN INERT ABSORBENT MATERIAL (EG ZEP-O-ZORB); PICK UP AND PLACE IN A CLEAN D.O.T. SPECIFICATION CONTAINER FOR DISPOSAL. WASH AREA THOROUGHLY WITH A DETERGENT SOLUTION AND THEN RINSE WELL WITH WATER.

#### WASTE DISPOSAL METHOD:

LIQUIDS CANNOT BE SENT TO LANDFILLS UNLESS SOLIDIFIED. UNUSABLE PRODUCT AND SOME COLLECTED, SPENT USE-DILUTIONS MAY REQUIRE DISPOSAL AS A HAZARDOUS WASTE AT A PERMITTED TREATMENT/STORAGE/DISPOSAL FACILITY. IN MOST STATES HAZARDOUS WASTES IN TOTAL AMOUNTS OF 220 LBS. OR LESS PER MONTH MAY BE DISPOSED OF IN A CHEMICAL OR INDUSTRIAL WASTE LANDFILL. IF COMPANY EFFLUENT IS ULTIMATELY TREATED BY A PUBLICLY OWNED TREATMENT WORKS, NEUTRALIZATION OF SPENT TANK-SOLUTIONS WITH SUB-SEQUENT DISCHARGE TO THE SEWER MAY BE POSSIBLE. CONSULT LOCAL? STATE AND FED-7 %L AGENCIES FOR PROPER DISPOSAL METHOD IN YOUR AREA.

RCRA HAZ. WASTE NOS.: DOCS (SEE ABOVE)

SECTION IX - S P E C I A L P R E C A U T I O N S

PRECAUTIONS TO BE TAKEN WHEN HANDLING AND STORING:

STORE TIGHTLY CLOSED CONTAINER IN A DRY AREA AT TEMPS. BETWEEN 40-120 DEGREES F. STORE AWAY FROM STRONG ACIDS AND OXIDIZING COMPOUNDS.

KEEP PRODUCT AWAY FROM SKIN AND EYES.

DO NOT BREATHE SPRAY MISTS OR VAPORS.

KEEP AWAY FROM FOOD AND FOOD PRODUCTS.

OLOTHING OR SHOES WHICH RECOME CONTAMINATED WITH SUBSTANCE SHOULD BE REMOVED

PROMPTLY AND NOT REWORN UNTIL THOROUGHLY CLEANED.

KEEP OUT OF THE REACH OF CHILDREN.

SECTION X - TRANSPORTATION DATA

DOT PROPER SHIPPING NAME

4 /

NONE

DOT HAZARD CLASS: N/A

DOT LABEL/PLACARD: NONE DOT I.D. NUMBER : N/A

) TSCA CHEMICAL INVENTORY - ALL INGREDIENTS ARE LISTED EFA CWA 40CFR PART 117 SUBSTANCE(RQ IN A SINGLE CONTAINER):

SODIUM DODECYLBENZÈNE SULFONATE-1000#  $i r_i$ 

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

#### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen—Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive Causes irreversible alterations in living tissue (e.g. burns),

EIR: Eye Irritant Only—Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL: Flammable—At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic—The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion—A primary route of exposure through swallowing a liquid or solid (see below).

INH: Inhalation—A primary route of exposure through breathing of vapors (see below).

IRR: Irritant—Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable—Category is not appropriate for this product.

N/D: Not Determined—Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit.—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer—Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value—A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic—The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time-weighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of lightlon; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained; properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

#### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use of hardling of our products, from incompatible product combinations, or from the failure to follow instructions, warning and advisories in the product's label and Material Safety Data Sheet.

**Material Safety Data Sheet** 

Aluminum Company of America, 1501 Alcoa Building, Pittsburgh, PA 15219



NO. 457E

Common Name	Phone	Date
Dolomite	Emergency: 412-553-4001 Chemtrec: 800-424-9300 Technical: 412-553-2881	Orig 86-07-23

Prepared by the Hazardous Materials Control Committee.

SECTION I. Material Description

Chemical Name & Formula: Dolomite, CaCO3. MgCO3; Silicon dioxide, SiO2

Other Designation: None

CAS No.: Dolomite (16389-88-1); Silicon Dioxide (7631-86-9) Manufacturer: Northwest Alloys, P.O. Box 115, Addy, WA 99101

Product Use: Chemical processing

SECTION II. Hazardous Ingredients and Occupational Exposure Limits

(>1%) TWA in mg/m<sup>3</sup>
% Typical ACGIH TLV OSH

OSHA PEL

CaCo<sub>3</sub>·MgCO<sub>3</sub>....97-100. Amorphous silica 10 SiO<sub>2</sub> (amorphous)...0-3

 $H_2O$ .... Remainder

 $LD_{50}$  found for oral route of administration:  $SiO_2$  (amorphous) 3160 mg/kg, rat

SECTION III. Physical Data

Physical Form: Solid Boiling Temperature: NA

Freeze-Melt Temperature: Not determined

Vapor Pressure (mm): NA Vapor Density (air = 1): NA

Evaporation Rate: NA

Specific Gravity: Not determined

Density: 2.87 g/cc Water Solubility: Slight

pH: 9.60 [50% weight (gm) to water volume (ml)]

Color: Grayish-white

Odor: None

Odor Threshold: NA

Coefficient of water/oil distribution: Not determined

SECTION IV. Fire and Explosion Data

Flashpoint: Auto-Ignition Temp.: Flammability Limits in Air: Upper: Lower: NA NA NA

Product is non-combustible. Not an explosion hazard. Use fire extinguishing agent suitable for the surrounding fire. Wear NIOSH approved, self-contained breathing apparatus and protective clothing when appropriate.

SECTION V. Reactivity Data

Material is stable under normal conditions of use, storage and transportation.

SECTION VI. Health Hazard Information (See Section II for exposure limits.)
This product has not undergone testing for either acute or chronic toxic effects. However, based on its chemical composition, we would expect it to be a low health risk by inhalation so long as the occupational exposure limits specified under Section II are met.

#### SECTION VII. Spill, Leak & Disposal Procedures

Use dry cleanup procedures; avoid dusting. Collect in containers or bags.

If reuse or recycling is not possible, material may be disposed at a sanitary landfill.

RCRA Hazardous Waste No. Not Federally Regulated

#### SECTION VIII. Special Protection and Precautions

Use with adequate ventilation to meet exposure limits as listed in Section II. Where the exposure limit is or may be exceeded, use NIOSH approved respiratory protection. Select appropriate respirator (dust respirator, etc.) based on the concentrations of actual or potential airborne contaminants present.

#### SECTION IX. Regulatory Information

Chemical substance components have been reported to the EPA Office of Toxic Substances in accordance with the requirements of the Toxic Substances Control Act (Title 40 CFR Part 710).

For purposes of SARA III reporting, this substance contains no ingredients listed on CERCLA, Extremely Hazardous, or 313 Lists.

The reportable chemical substances in this product are regulated by the OSHA Hazard Communication Standard (29CFR 1910.1200) solely because they are listed by ACGIH. However, they do not fit any of the five proposed hazard categories under SARA Sections 311, 312.

D.O.T. Shipping Name, Hazard Class, I.D. No. (if applicable) Not Regulated Canadian TDG Hazard Class & PIN - Not Regulated

#### SECTION X. References

U.S. Dept. of Health and Human Services, NIOSH: Registry of Toxic Effects of Chemical Substances, 1985-86 Edition

Sax, N. Irving: <u>Dangerous Properties</u> of <u>Industrial Materials</u>, Van Nostrand Reinhold Co., Inc., 1984

Information herein is given in good faith as authoritative and valid; however, no warranty, express or implied, can be made.

TO: 5032938999

P, 2/3 PAGE:

PAGE 02

5032892272 06/21/1994 14:53

ASH GROVE CEMENT

iai Safety Data Sheet Company of America, 1501 Atoos Building, Pitteburgh, PA 15219

MD. 4572

Date Phone 412-553-4001 90-04-LD Esargency: Rev 800-424-9300 Orig 86-07-23 Bolosite Charterset 412-553-2881 Technical:

Proposed by the Masardous Materials Control Committee.

SECTION 1. Material Description

Chamical Mama & Formula: Delomita, CaCO, MgCO,; Silicon dioxida, SiO,

Other Designation: None

CAS No.: Dolomite (16389-88-1); Silicon Dioxide (7631-86-9) Manufacturer: Northwest Alleys, P.O. Box 115, Addy, VA 99101

Product Use: Chemical processing

SECTION II. Hazardour Ingredients and Occupational Exposure Limits THA ID NO P (>LZ)

Traisel

ACCIH TLY

97-100

Amorphous silica 10

CaCo, MgCO, . . . SiO<sub>2</sub> (amorphous) . . 0+3 H.O. . . . . . . . Remainder

LD: found for oral route of administration: SiO, (amorphous) 3160 mg/kg, rat

SECTION III. Physical Data

Physical form: Solid

Boiling Temperature: NA Fromze-Molt Tomperature: Not determined

Vapor Prossure (mm): NA Vapor Density (air = 1):

Evaporation Rate: NA

Specific Gravity: Not determined

Density: 2.87 g/cc Water Solubility: Slight

pH: 9.60 [50% weight (gm) to water volume (al)]

Color: Grayish-white

Odor: None

Odor Threshold: NA

Confficient of water/oil distribution: Not determined

SECTION IV. Fire and Explorion Data

Flashpoint: NA

Auto-Ignition Temp.: Flammability Limits in Air: Upper: Louer;

Product is non-combustible. Not an explosion hazard. Use fire extinguishing agent suitable for the surrounding fire. Year MIOSH approved, self-contained breathing apparatus and protective clothing when appropriate.

SECTION V. Reactivity Data

Material is stable under normal conditions of use, storage and transportation.

SECTION VI. Health Essard Information (See Section II for exposure limits.) This product has not undergone testing for either scute or chronic texte effects. However, based on its chemical composition, we would expect it to be a low health risk by inhalation so long as the occupational exposure limitsspecified under Section II are mat.

TO: 5032938999

PAGE: P. 3/3

PAGE 03

06/21/1994 14:53

5032892272

37E

Page 2

NCTION VII. Spill, Leak & Disposal Processures

Use dry cleanup procedures; avoid dusting. Collect in containers or bags.

If remem or recycling is not possible, material may be disposed at a sanitary landfill.

RCRA Hazardous Waste No. Mot Jederally Regulated

SECTION VIII. Special Protection and Prospections
Use with adequate ventilation to meet exposure limits as listed in Section II.
Where the exposure limit is or may be exceeded, use NIOSE approved respiratory protection. Select appropriate respirator (dust respirator, etc.) based on the concentrations of actual or potential airborne conteminants present.

SECTION IX. Regulatory Information
Chamical substance components have been reported to the EPA Office of Toxic
Substances in accordance with the requirements of the Toxic Substances Control
Acc (Title 40 CFR Part 710).

For purposes of SARA III reporting, this substance contains no ingredients listed on CERCLA, Extremely Masardous, or 313 Lists.

The reportable chemical substances in this product are regulated by the CSHA "Hazard Communication Standard (29CFR 1910.1200) solely because they are listed by ACCIH. However, they do not fit any of the five proposed hazard categories under SAPA Sections 311, 312.

D.C.T. Shipping Name, Hazard Class, I.D. No. (if applicable) Not Regulated Canadian TIC Hazard Class & PIN - Not Regulated

SECTION X. References

U.S. Dept. of Health and Human Services, NIOSH: Registry of Toxic Effects of Chemical Substances, 1985-86 Edition

Sax, N. Irving: Dangerous Properties of Industrial Haterials, Van Nostrand Reinhold Co., Inc., 1984

Information herein is given in good faith as authoritative and valid; however, no varianty, express or implied, can be made.

#### MATERIAL SAFETY DATA SHEET

FOR COA	TINGS , RESINS	S AND RELATED MATERIALS	
•	DATE OF PREPA	ARATION- 4/13/90	PAGE 1
IANUFACTURER'S NAME : R	ODDA PAINT COM	1PANY	
DDRESS: 6	932 S.W. MACAI ORTLAND, OREGO	DAM AVENUE DN 97219	
MERGENCY TELEPHONE NO. NFORMATION TELEPHONE N	DAY: (503	3) 244-7512 NIGHT: (503) 645-564 3) 244-7512 NIGHT: (503) 645-564	2 2
3		RODUCT IDENTIFICATION	
MANUFACTURER'S CODE IDE RODUCT CLASS: ALKYD E RADE NAME: PORSALI MIS INFORMATION ** H	NTIFICATION: 5 NAMEL TE MASSTONE EN EALTH- 2 FLA EACTIVITY- 0	NAMEL-BLACK	Н
		AZARDOUS INGREDIENTS	
	IN THIS PRODU AS CARCINOGEN	JCT HAVE NOT BEEN LISTED BY NTP, NIC.	
REPORTING REQ	UIREMENTS OF S	E TOXIC CHEMICALS SUBJECT TO THE SECTION 313 OF THE EMERGENCY PLAN N ACT OF 1986 AND OF 40 CFR 372.	INING
AND COMMUNITY	[/T/11]   10   1404	# 1	
INGREDIENT 'ATERIAL DESCRIPTION	CAS#	% BY TLV-(TWA) WEIGHT PPM MG/M3 LEL	
INGREDIENT 1ATERIAL DESCRIPTION LKYD RESIN SOLUTION	CAS#	% BY TLV-(TWA) WEIGHT PPM MG/M3 LEL	PRESSURE MMHG @68DF
INGREDIENT HATERIAL DESCRIPTION ALKYD RESIN SOLUTION	CAS#	% BY TLV-(TWA) WEIGHT PPM MG/M3 LEL	PRESSURE MMHG @68DF
INGREDIENT 'ATERIAL DESCRIPTION  ALKYD RESIN SOLUTION  ALIPHATIC HYDROCARBON	CAS#	% BY TLV-(TWA) WEIGHT PPM MG/M3 LEL 1 20 - 25   100.00 NOT EST  1	PRESSURE MMHG @68DF .01 .10
INGREDIENT 'ATERIAL DESCRIPTION  ALKYD RESIN SOLUTION  ALIPHATIC HYDROCARBON  AROMATIC HYDROCARBON	CAS#	% BY TLV-(TWA) WEIGHT PPM MG/M3 LEL 1 20 - 25   100.00 NOT EST  1 1 10 - 15   225.00 NOT EST	PRESSURE MMHG @68DF .01 .10 .91 .10
INGREDIENT NATERIAL DESCRIPTION NLKYD RESIN SOLUTION NLIPHATIC HYDROCARBON NROMATIC HYDROCARBON DLEFIN POLYMER	CAS#	% BY TLV-(TWA) WEIGHT PPM MG/M3 LEL 1 20 - 25   100.00 NOT EST  1 1 10 - 15   225.00 NOT EST  1 .5 - 5   100.00 NOT EST  1	PRESSURE MMHG @68DF .01 .10 .91 .10 .01 .50
INGREDIENT HATERIAL DESCRIPTION  ALKYD RESIN SOLUTION  ALIPHATIC HYDROCARBON  AROMATIC HYDROCARBON  DLEFIN POLYMER  DRGANOPHILIC CLAY	CAS#  1 164742-88-7 164742-95-6 *	% BY TLV-(TWA) WEIGHT PPM MG/M3 LEL  1 20 - 25   100.00 NOT EST  1  1 10 - 15   225.00 NOT EST  1 .5 - 5   100.00 NOT EST  1  1 .5 - 5   100.00 NOT EST  1	PRESSURE MMHG @68DF .01 .10 .91 .10 .01 .50
INGREDIENT HATERIAL DESCRIPTION ALKYD RESIN SOLUTION ALIPHATIC HYDROCARBON AROMATIC HYDROCARBON DLEFIN POLYMER DRGANOPHILIC CLAY BARIUM SULFATE	CAS#  1 164742-88-7 164742-95-6 * 171011-26-2	% BY TLV-(TWA) WEIGHT PPM MG/M3 LEL  1 20 - 25   100.00 NOT EST  1  1 10 - 15   225.00 NOT EST  1 .5 - 5   100.00 NOT EST  1  1 .5 - 5   100.00 NOT EST  1  1 .5 - 5   100.00 NOT EST  1	PRESSURE MMHG @68DF .01 .10 .91 .10 .01 .50
INGREDIENT HATERIAL DESCRIPTION  ALKYD RESIN SOLUTION ALIPHATIC HYDROCARBON AROMATIC HYDROCARBON DLEFIN POLYMER DRGANOPHILIC CLAY BARIUM SULFATE WEPHELINE SYENITE	CAS#  164742-88-7 164742-95-6 * 171011-26-2 17727-43-7 137244-96-5	% BY TLV-(TWA) WEIGHT PPM MG/M3 LEL  1 20 - 25   100.00 NOT EST  1  1 10 - 15   225.00 NOT EST  1 .5 - 5   100.00 NOT EST  1  1 .5 - 5   100.00 NOT EST  1  1 .5 - 5   NOT EST  2.50  1 5 - 10   NOT EST  13.00	PRESSURE MMHG @68DF .01 .10 .91 .10 .01 .50 .01 6.00
INGREDIENT IATERIAL DESCRIPTION  ALKYD RESIN SOLUTION ALIPHATIC HYDROCARBON AROMATIC HYDROCARBON DLEFIN POLYMER DRGANOPHILIC CLAY BARIUM SULFATE VEPHELINE SYENITE LAGNESIUM SILICATE	CAS#  164742-88-7 164742-95-6 * 171011-26-2 17727-43-7 137244-96-5	% BY TLV-(TWA) WEIGHT PPM MG/M3 LEL  1 20 - 25   100.00 NOT EST  1  1 10 - 15   225.00 NOT EST  1  1 .5 - 5   100.00 NOT EST  1  1 .5 - 5   100.00 NOT EST  1  1 .5 - 5   NOT EST  2.50   1 5 - 10   NOT EST  13.00   1 5 - 10   NOT EST  2.00	PRESSURE MMHG @68DF .01 .10 .91 .10 .01 .50 .01 6.00
INGREDIENT IATERIAL DESCRIPTION  ALKYD RESIN SOLUTION ALIPHATIC HYDROCARBON AROMATIC HYDROCARBON DLEFIN POLYMER DRGANOPHILIC CLAY BARIUM SULFATE VEPHELINE SYENITE LAGNESIUM SILICATE	CAS#  1 164742-88-7 164742-95-6 * 171011-26-2 17727-43-7 137244-96-5 114807-96-6	% BY TLV-(TWA) WEIGHT PPM MG/M3 LEL  1 20 - 25   100.00 NOT EST  1  1 10 - 15   225.00 NOT EST  1 .5 - 5   100.00 NOT EST  1  1 .5 - 5   100.00 NOT EST  1  1 .5 - 5   NOT EST  2.50  1 5 - 10   NOT EST  13.00  1 5 - 10   NOT EST  10.00	PRESSURE MMHG @68DF .01 .10 .91 .10 .01 .50 .01 6.00
INGREDIENT  IATERIAL DESCRIPTION  ALKYD RESIN SOLUTION  ALIPHATIC HYDROCARBON  AROMATIC HYDROCARBON  DLEFIN POLYMER  DRGANOPHILIC CLAY  BARIUM SULFATE  VEPHELINE SYENITE  VAGNESIUM SILICATE  ALKYD OIL  DIL MOD. POLYURETHANE  ALKYD RESIN SOLUTION	CAS#    164742-88-7	% BY TLV-(TWA) WEIGHT PPM MG/M3 LEL  1 20 - 25   100.00 NOT EST  1  1 10 - 15   225.00 NOT EST  1 .5 - 5   100.00 NOT EST  1  1 .5 - 5   100.00 NOT EST  1  1 .5 - 5   NOT EST  2.50  1 5 - 10  NOT EST  13.00  1 5 - 10  NOT EST  2.00  1 5 - 10  NOT EST  2.00  1 5 - 10  NOT EST  2.00  1 5 - 10  NOT EST  10.00  1 10 - 15  NOT EST  2.00  1 5 - 10  NOT EST  10.00  1 5 - 10  NOT EST  10.00	PRESSURE MMHG @68DF .01 .10 .91 .10 .01 .50 .01 6.00

ASH GROVE CEMENT COMPANY

28242 41040 540 Appendix33-000658

\*\*\* - THIS PRODUCT CONTAINS PIGMENTS WHICH MAY BECOME A DUST NUISANCE WHEN REMOVED BY ABRASIVE BLASTING, SANDING OR GRINDING.

### SECTION III PHYSICAL DATA

HIGH 418.0 LOW 281.0 6.00 HEAVIER THAN AIR BOILING RANGE

EQUAL TO BUTYL ACETATE

VAPOR PRESSURE
VAPOR DENSITY
EVAPORATION RATE
WEIGHT PER GALLON 9.91% VOLATILE BY VOLUME % VOLATILE BY WEIGHT 48.72 32.90 APPEARANCE-ODOR- BLACK LIQUID

#### SECTION IV -- FIRE AND EXPLOSION HAZARD DATA

LAMMABILITY CLASSIFICATION OSHA-CLASS IC DOT- FLAMMABLE LIQUID OWEST FLASHPOINT T.C.C. SO.O LOWER EXPLOSION LEVEL (LEL) .9

(Yes)-ALCOHOL FOAM EXTINGUISHING MEDIA: (Yes)-FOAM (Yes)-CO2 (Yes) - DRY CHEMICAL (Yes) - WATER FOG (N/A) - OTHER

Hanket fire with one of the above extinguishing media.

INUSAL FIRE AND EXPLOSION HAZARDS: Vapors are heavier than air and may er el along the ground or be moved by ventilation and ignited by heat; ilmet lights, other flames and ignition sources at locations distant from material handling point. Never use welding or cutting torch on or near drum 'even empty) because product (just residue) can ignite EXPLOSIVELY! SPECIAL FIRE FIGHTING PROCEDURES: For fires involving this material, do not inter any enclosed or confined fire space without proper protective equipment. Self-contained breathing apparatus with a full facepiece operated in messure-demand or other positive pressure mode to protect against the lazardous effects of normal products of combustion or oxygen deficiency.

#### SECTION V -- HEALTH HAZARD DATA

!FFECTS OF OVEREXPOSURE: FOR PRODUCT-EYES:Can cause irritation, redness, earing, blurred vision. SKIN:Prolonged or repeated contact can cause moder: ite irritation, defatting, dermatitis.

(Yes)-INHALATION (Yes)-INGESTION 'RIMARY ROUTE(S) OF ENTRY: (Yes) - DERMAL REATHING: Excessive breathing of vapors can cause masal and respiratory rritation, dizziness, weakness, fatigue, nausea, headache, possible unconiciousness, and even asphyxiation. SWALLOWING: Can cause gastrointestinal rritation, nausea, vomiting, and diarrhea. Aspiration of material into ungs can cause chemical pneumonitis which can be fatal.

MERGENCY & FIRST AID PROCEDURES: SKIN- Wash exposed area with soap & water EYES-Flush with large amounts of water. INGESTION- Do not induce vomitingjet medical attention! INHALATION-If affected, remove to fresh air. If preathing is difficult, administer oxygen. If breathing has stopped, give irtificial respiration. Get medical attention.

TE CAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE: None known.

SECTION VI -- REACTIVITY DATA

STABILITY: ( )-UNSTABLE (Yes)-STABLE (XXX)- WILL NOT OCCUR
HAZARDOUS POLYMERIZATION ( )-MAY OCCUR
HAZARDOUS DECOMPOSITION PRODUCTS- Normal combustion forms carbon dioxide &
Pater vapor; incomplete combustion can produce carbon monoxide.
CONDITIONS TO AVOID-Excessive temperatures.
CONDITIONS TO AVOID-Excessive temperatures.
CONDITIONS TO MATERIALS TO AVOID)- Strong oxidizing agents (Nitric Acid, Permanganates, MEK Peroxide, Etc.)

#### SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Eliminate all gnition sources (flares, flames including pilot lights & electrical sparks). Persons not wearing protective equipment should be excluded from trea of spill until clean-up has been completed. Stop spill at source, dike trea of spill to prevent spreading, pump liquid to salvage tank. Remaining iquid may be taken up on sand, clay, earth, floor absorbent, or other absorbent material and shoveled into containers. Prevent run-off to sewers, streams, or other bodies of water.

JASTE DISPOSAL METHOD- Destroy by liquid incineration. Material collected in absorbent material may be deposited in an approved toxic substance andfill in accordance with local, state, and federal regulations.

#### SECTION VIII-- SAFE HANDLING AND USE INFORMATION

RE' IRATORY PROTECTION: If TLV of the product or any component is exceeded, in OSH/MESA jointly approved self-contained breathing apparatus with a 'ull face piece operated in pressure demand or other positive pressure mode is advised; however, OSHA regulations also permit other NIOSH/MESA respirators under specified conditions. (See your safety equipment supplier). PROTILATION: Provide sufficient mechanical and/or local exhaust to maintain exposure below TLV(s).

EYE PROTECTION: Chemical splash goggles in compliance with OSHA regulations are advised.

\*ROTECTIVE GLOVES: Wear resistant gloves such as: , BUNA-N.

THER PROTECTIVE EQUIPMENT: To prevent repeated or prolonged skin contact, year impervious clothing and boots.

HYGENIC PRACTICES: Wash hands before eating or using washroom.

#### SECTION IX-- SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in a cool, dry area. Seep away from heat, sparks, and open flame. Keep containers closed when not in use. Use only with adequate ventilation.

OTHER PRECAUTIONS: Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in this data sheet must be observed.

READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL!

NATIONAL SANITARY SUPPLY CO. 13217 S. Figueroa Street Los Angeles, California 90 90061 Manufacturer:
BIG \*D\* INDUSTRIES, INC.
5620 S. W. 29th
P.O. BOX 82275
Oklahoma City, OK 73148
Emergency Tel. Nos. 800/654-4752
405/682-2541

MATERIAL SAFETY DATA SHEET

SECTION 1. IDENTIFICATION OF PRODUCT

BIG \*D\* SOLID DEODORANT, NATURAL #602, #625, #661 Product Name:

Eate Issued: 04/17/90 Cate Revised: 12/19/85 National Item#: 1854XX

9, SECTION 2. INGREDIENTS CAS NUMBER CSHA PEL ACGIH TLV AMYL ACETATE 100 628-63-7 100 PETROLEUM DISTILLATE 68551-18-8 500

SECTION 3. PHYSICAL DATA

Boiling Point (F): N/A
Vapor Pressure (mm Hg\_): N/A
Vapor Density (Air=1): >1
Evaporation Rate (nButyl Acetate=1): <1
Solubility in Water: INSOLUBLE

Specific Gravity (H20=1): N/A pH Range: N/A

Melting Point:

Appearance and Odor: BEIGE COLORED BLOCK WITH PLEASANT FRAGRANCE.

Section 4. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method): N/A

Flammable Limits: LEL# NOT DETERMINED UEL = NOT DETERMINED

Extinguishing Media: CARBON DIOXIDE, DRY FOAM, WATER SPRAY

Special Fire Fighting Procedures: NONE

Unusual Fire & Explosion Hazards: NONE

SECTION 5. REACTIVITY DATA

Stability: STABLE

Incompatibility - Materials to Avoid: AVOID CONTACT WITH STRONG OXIDIZING AGENTS SUCH AS NITRIC ACID.

Hazardous Polymerization: WILL NOT OCCUR Conditions to Avoid: NONE

Hazardous Decomposition Products: NONE

SECTION 6. SPILL, LEAK AND DISPOSAL PROCEDURES

Steps To Be Taken In Case Material Is Released or Spilled: SWEEP UP AND DISCARD IN TRASH.

Waste Disposal: LANDFILL. DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

Precautions to Be Taken In Handling and Storing: DO NOT STORE NEAR HEAT OR OPEN FLAME.

Other Precautions: NONE

MATERIAL SAFETY DATA SHEET Product Name: BIG \*D\* SOLID DEODORANT, NATURAL #602, #625, #661 Date Issued: 05/17/90

SECTION 7. HEALTH HAZARD DATA

Route(s) Of Entry: INHALATION, SKIN, INGESTION,

Health Hazards (Acute and Chronic)

Acute - NONE KNOWN

Chronic - SKIN / EYE CONTACT MAY PRODUCE IRRITATION.

Carcinogenicity: NTP - NO IARC MONOGRAPHS - NO OSHA Regulated -NO

Signs and Symptoms of Exposure: NONE KNOWN

Medical Conditions Generally Aggravated By Exposure: NONE KNOWN

Emergency an AND WATER. 

SECTION 8. CONTROL MEASURES

Respiratory Protection: NONE REQUIRED

Ventilation: ADEQUATE LOCAL & MECHANICAL EXHAUST

Protection Gloves: NONE REQUIRED

Eye Protection: NONE REQUIRED

Other Protective Clothing/Equipment: NONE

Work/Hygienic Practicess: GOOD HOUSEKEEPING PRACTICES. AVOID SKIN/EYE CONTACT.

SECTION 9. ADDITIONAL INFORMATION & PRECAUTIONS

Handling And Storage Conditions: DO NCT STORE NEAR HEAT OR OPEN FLAME.

HMIS RATING: HEALTH -1 FLAMMABILITY -2 REACTIVITY -0

THE INFORMATION ON THIS MATERIAL SAFETY DATA SHEET REPRESENTS THE LATEST DATA AND BEST OPINION AS TO THE PROPER USE AND HANDLING OF THIS PRODUCT UNDER NORMAL CONDITIONS. ANY USE OF THIS PRODUCT OR METHOD OF APPLICATION WHICH IS NOT IN CONFORMANCE WITH THIS DATA SHEET AND THE PRODUCT LABEL DIRECTIONS, IS THE RESPONSIBILITY OF THE USER. THIS MATERIAL SAFETY DATA SHEET WAS PREPARED TO COMPLY WITH THE OSHA HAZARD COMMUNICATION REGULATION.



ZEP MANUFACTURING COMPANY

ST IN MAINTENANCE PRODUCTS

# MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION

05/02/90 PAGE 1 OF 3

% IN

ISSUE DATE: 04/23/90 CHOKE AND CARBURETOR CLEANER

SUPERSEDES: 07/26/89 PROGUET NUMBER OF

SECTION I - EMERGENCY CONTACTS

TEF MANUFACTURING COMPANY NON-OFFICE HOURS, WEEKENDS, AND HOLIDAYS: AREA CODE 404 P.O. BOX 2015

435-2973, 996-0899, 351-2952, 971-3367, 432-2873

LOCAL POISON CONTROL CENTER ................

TRANSPORTATION EMERGENCY

TELEPHONE (404)352-1680 BETWEEN 8:000

BETWEEN 8: 00A. M. -5: 00P. M. CHEMTREC: TOLL FREE 1-800-424-9300 ALL CALLS RECORDED (EASTERN TIME ZONE) DISTRICT OF COLUMBIA (202)483-7616 ALL CALLS RECORDED

TLV

SECTION II - HAZARDOUS INGREDIENTS

DESIGNATIONS LORIDE \*\* DICHLOROMETHANE, METHYLENE C\*\* METHYLENE DICHLORIDE; C # 75-09-2; RTECS# PA8050000; OSHA

(PPM) (SEE REVERSE) PROD. 50 CNS IRR CAR 40-50

EFFECTS

PEL-500 PPM: OSHA CEILING LIMIT-1000 PPM @## XYLENE ## DIMETHYL BENZENE: XYLOL: CAS#1330-20-7;

100 FBL CNS IRR 40-50

RTECS# ZE2100000; OSHA PEL-100 PPM; OSHA/ACGIH STEL-

150 PPM

@## METHANOL ## METHYL ALCOHOL; WOOD ALCOHOL; COLUMBIA 200 TOX FEL IRR 10-20

SPIRITS: CAS# 67-56-1; RTECS# PC1400000; OSMA PEL-

200 PPM; OSHA/ACGIH STEL-250 PPM

\*\* MORPHOLINE \*\* TETRAHYDRO-1,4-0X0ZINE; DIETHYLENE- 20 TOX IRR ( 5

IMIDE OXIDE: CAS# 110-91-8: RTEC5# QD6475000: QSHA

PEL-20 PPM; OSHA/ACGIH STEL-30 PPM

e identifies chemicals listed under sara-section 313 for release reporting.

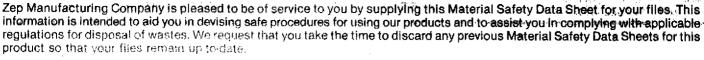
SPECIAL NOTE: ADVERSE HEALTH EFFECTS WOULD NOT BE EXPECTED UNDER RECOMMENDED CONDITIONS OF USE SO LONG AS PRESCRIBED SAFETY PRECAUTIONS ARE PRACTICED.

SECTION III - HEALTH HAZARD DATA

ACUTE EFFECTS OF OVEREXPOSURE:

INMALATION OF VAPOR CAN PRODUCE CENTRAL NERVOUS SYSTEM DEPRESSION CHARACTERIZED BY DIZZINESS, HEADACHE, NAUSEA, CARDIAC AND/OR RESPIRATORY DEPRESSION, STUPOR, PACONSCIOUSNESS AND DEATH, IN EXTREME CASES, EXPOSURE TO HIGH CONCENTRATIONS OF POR BY DIRECT CONTACT OR INHALATION CAN BE IRRITATING TO MUCOUS MEMBRANES. SUCH AS EYES AND UPPER RESPIRATORY TRACT. SEVERE EYE EXPOSURE TO LIQUID CAN CAUSE REVERSIBLE EYE, DAMAGE. SKIN CONTACT MAY CAUSE A BURNING SENSATION AND REDDENING OF THE SKIN, INTRODUCTION OF SOLVENT TO THE LUNGS, AS IN ASPIRATION OF VOMITUS FLUIDS, MAY CAUSE CHEMICAL PNEUMONIA. EXPOSURE TO THIS PRODUCT MAY AG-GRAVATE EXISTING RESPIRATORY AND CARDIAC CONDITIONS.

INHALATION OF AEROSOL MIST MAY PRODUCE CHEMICAL PNEUMONIA.





By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen—Considered a potential or confirmed cancer causing agent by either the Matibrel Zexisology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Jerith Agranistration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F, chemical gives of enough vapor to inhibite if a source of

ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

1. 《李福文》第45章 李语:

537 7777

FBL: Flammable -- At temperatures under 100°F., chemical gives off enough vapor to ignite it

HTX: Highly Toxic--The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or in

ING: Ingestion—A primary route of exposure through swallowing a liquid or solid (see below).

INH: Inhalation—A primary route of exposure through breathing of vapors (see below).

IRR: Irritant—Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable—Category is not appropriate for this product.

N/A: Not Applicable—Category is not appropriate for this product.

N/D: Not Determined—Insufficient information for a determination for this item. N/D: Not Determined—Insurricent information for a determined Selection of the Selection NIOSH: National Institute for Occupational Safety and Health.

PEL: Permissible Exposure Limit—The time weighted average exposure value established by OSHA for repeated exposure during anv 8 hours per day, 5 days per week, without adverse effects. The same state of the

SKIN: A primary route of exposure through contact with the skin (see below). TLV: Threshold Limit Value -- A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic—The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This timeweighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalizedsystemic or specific-organ toxic effect.

As a further word of caution. Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained; properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and increase. accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet, Consult your supervisor, or Zep Manufacturing Company, if you have any questions. DISCLAIMER THESE TO SEE All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.



# MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION

ISSUE DATE: 04/23/90 CHOKE AND CARBURETOR CLEANER

SUPERSEDES: 07/26/89 PROMOTES TO THE STATE OF THE STATE O

SECTION III - HEALTH HAZARD DATA (CONTINUED)

CHRONIC EFFECTS OF OVEREXPOSURE:

REPEATED OR PROLONGED CONTACT BY INHALATION OR SKIN ABSORPTION MAY PRODUCE LIVER OR KIDNEY DAMAGE OR DAMAGE TO THE CENTRAL NERVOUS SYSTEM (CHARACTERIZED BY TING-LING OR NUMBNESS IN THE EXTREMITIES, BLURRED VISION OR CONFUSION). SKIN WHICH IS DEFATTED BY REPEATED EXPOSURE TO SOLVENTS, IS MORE SUSEPTIBLE TO IRRITATION, INFECTION, AND DERMATITIS.

METHANOL IS ELIMINATED FROM THE BODY VERY SLOWLY, THEREFORE DAILY EXPOSURE CAN HAVE CUMULATIVE EFFECTS INCLUDING OPTIC NERVE DAMAGE.

ONE OF THE INGREDIENTS IN THIS PRODUCT HAS BEEN SHOWN TO CAUSE TUMORS IN LABOR-ATORY TEST ANIMALS. THE RELEVANCE OF THESE STUDIES FOR HUMANS HAS NOT BEEN ESTABLISHED.

EST'D PELYTLY: APPROX. 153 PPM PRIMARY ROUTES OF ENTRY: INH, SKIN, ING.

HMIS CODES: HEALTH 2: FLAM. 4: REACT. 1: PERS. PROTECT. X : CHRONIC HAZ. YES FIRST AID PROCEDURES:

SKIN : WASH CONTAMINATED SKIN THROUGHLY WITH SOAP OR A MILD DETERGENT. APPLY A

SKIN CREAM WITH LANOLIN. GET MEDICAL ATTENTION IF IRRITATION PERSISTS.

EYES : IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, OC-

CASIONALLY LIFTING UPPER AND LOWER LIDS. GET MEDICAL ATTENTION AT ONCE.

INHALE: MOVE EXPOSED PERSON TO FRESH AIR AT ONCE. IF BREATHING HAS STOPPED, PER-

FORM ARTIFICIAL RESPIRATION. GET MEDICAL ATTENTION IMMEDIATELY.

THIGEST: IF SWALLOWED, INDUCE VOMITING BY GIVING 2 GLASSES WATER, FUTTING FINGER

DOWN THROAT, KEEP HEAD BELOW HIFS. GET MEDICAL HELF IMMEDIATELY.

SECTION IV - S F E C I A L F R O T E C T I O N I N F O R M A T I O N

PROTECTIVE CLOTHING : WEAR VITON GLOVES OR USE GLOVES WITH DEMONSTRATED

RESISTANCE TO THE INGREDIENTS IN THIS PRODUCT.

EYE PROTECTION : USE TIGHT-FITTING, SPLASH-PROOF SAFETY GOGGLES, CONTACT

LENSES SHOULD NOT BE WORN WHEN HANDLING THIS MATERIAL.

RESPIRATORY PROTECTION: IF VENTILATION IS INADEQUATE, WEAR A PROPERLY FITTING MSHA OR OSHA-APPROVED RESPIRATOR.

VENTILATION -

: VENTILATION SHOULD BE EQUAL TO OUTDOORS. USE EXHAUST

FANS AND/OR EXHAUST HOOD IN ENCLOSED SPACES.

SECTION V - P H Y S I C A L D A T A (FOR FILL MATERIAL ONLY)

BOILING POINT (F) : 107-284F SPECIFIC GRAVITY

VAPOR PRESSURE(MMHG): APPROX. 163 PERCENT VOLATILE BY VOLUME (%) : 100

EVAPORATION RATE(CCL4 =1): 2.5 VAPOR DENSITY(AIR=1): 2.5

PHIUSE DILUTION OF SOLUBILITY IN WATER : NEGLIGIBLE : N/A

): N/A

APPEARANCE AND ODOR :A CLEAR, COLORLESS LIQUID WITH SOLVENT ODOR.

SECTION VI - FIRE AND EXPLOSION DATA

ASH POINT(F) (METHOD USED): FLAMMABLE

FLAMMABLE LIMITS LEL 1.0 UEL 22.0

EXTINGUISHING MEDIA : COZ, DRY CHEMICAL, FOAM

SPECIAL FIRE FIGHTING: WEAR SELF-CONTAINED POSITIVE PRES. BREATHING APPARATUS.

UNUSUAL FIRE HAZARDS : CONCENTRATED VAPOR MAY IGNITE IF EXPOSED TO SPARK.

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up to date.



基準原式 医腔切迹 化二硫氮

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

#### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen—Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP): 19 the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA). CBL: Combustible—At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ... ignition is present. n due l'in the effet febreir

CNS: Central Nervous System Depressant.

COR: Corrosive Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only—Causes reversible reddening and/or inflammaryon of eye tissues.

EIR: Eye Irritant Only—Causes reversible reddening and/or innammand eye usees.

Est'd: Estimated.

FBL: Flammable—At temperatures under 100°F., chemical gives of tarbush yapor to Ignite If a source of ignition is present.

HTX: Highly Toxic—The probable lethal dose for a 70 kg (150 lb//han is one teaspoonful or more.

ING: Ingestion—A primary route of exposure through swallowing a liquid or solid (see below).

INH: Inhalation—A primary route of exposure through breathing of vapility (see below).

IRR: Irritant—Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable—Category is not appropriate for this possible item.

N/D: Not Determined—Insufficient information for a determination and Health.

N/D: Not Determined—Institute for Occupational Safety and Health.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit—The time-weighted average exposure value established by OSHA for repeated exposure during

SEN: Sensitizer—Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value—A time-weighted average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic—The probable lethal dose for a 70 kg man is one ourice or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEUTLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time weighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, 333 in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products, Zep-Manufacturing Company is concerned for your health and safety. All the Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

#### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the fallure to follow instructions, warnings and advisories, in the product's label and Material Safety Data Sheet. on the first of the control of the first of the control of the con



ZEP MANUFACTURING COMPANY

"ST IN MAINTENANCE PRODUCTS

# MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION

ISSUE DATE: 04/23/90 CHOKE AND CARBURETOR CLEANER

SUPERSEDES: 07/26/89 PRODUCT NAMED 0886

SECTION VII - REACTIVITY DATA

STABILITY

: STABLE

INCOMPATIBILITY(AVOID) : HEAT, OPEN FLAME, SPARK, AND DXIDIZING AGENTS

POLYMERIZATION

: WILL NOT OCCUR.

HAZARDOUS DECOMPOSITION: CARBON DIOXIDE, CARBON MONOXIDE, HYDROGEN CHLORIDE, AND

SMALL AMOUNTS OF PHOSGENE & CHLORINE GAS.

SECTION VIII - S P I L L AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

OBSERVE SAFETY PRECAUTIONS IN SECTIONS 4 & 9 DURING SPILL CLEAN-UP. LARGE SPILLS ARE UNLIKELY DUE TO PACKAGING. SPILL MAY BE ABSORBED ON AN INERT ABSORB-ENT (EG ZEP-O-ZORB), PLACED IN A SUITABLE CONTAINER FOR DISPOSAL. WASH AREA THOROUGHLY WITH A DETERGENT SOLUTION AND RINSE WELL WITH WATER.

WASTE DISPOSAL METHOD:

PRODUCT IS CONSUMED IN USE DO NOT CRUSH, PUNCTURE OR INCINERATE SPENT CONTAIN-ERS. LARGE MUMBERS OF ARROSOL CONTAINERS MAY REQUIRE HANDLING AS A HAZARDOUS WASTE, BUT IN MOST STATES TOTAL HAZARDOUS WASTE QUANTITIES LESS THAN 220 LBS PER MONTH MAY ALLOW DISPOSAL IN A CHEMICAL OR INDUSTRIAL WASTE LANDFILL. CONSULT LOCAL, STATE AND FEDERAL AGENCIES FOR THE PROPER DISPOSAL METHOD IN YOUR AREA.

RCRA HAZ. WASTE NOS.: FOO2, FOO3

SECTION IX - S P E C I A L P R E C A U T I O N S

PRECAUTIONS TO BE TAKEN WHEN HANDLING AND STORING:

CHRONIC AND SUBACUTE EXPOSURE TO THIS MATERIAL PREDOMINANTLY AFFECTS THE CENTRAL NERVOUS SYSTEM. SYMPTOMS OBSERVED MAY BE THE SAME AS THOSE FOR ACUTE OVEREXPOSURE, AND MAY INCLUDE; VISUAL DISTURBANCES, ATAXIA, STAGGERING GAIT, WEAKNESS, TREMORS, VERTIGO, DROWSINESS, CONFUSION, PERSONALITY CHANGES, DIFFICULTY IN SPEECH, AND BLURRED VISION PROGRESSING TO COMPLETE BLINDNESS. THESE SYMPTOMS MAY BE DELAYED IN ONSET AND MAY CONTINUE FOR SOME TIME AFTER EXPOSURE HAS STOPPED.

FLAMMABLE! STORE AND USE AWAY FROM HEAT, SPARKS, OPEN FLAME, AND ANY SOURCE OF IGNITION.

DO NOT BREATHE SPRAY MISTS OR VAPORS.

SECTION X - TRANSPORTATION DATA

DOT PROPER SHIPPING NAME

CONSUMER COMMODITY

DOT HAZARD CLASS: N/A

DOT LABEL/PLACARD: ORM-D

A TSCA CHEMICAL INVENTORY - ALL INGREDIENTS ARE LISTED

EPA CWA 40CFR PART 117 SUBSTANCE(RQ IN A SINGLE CONTAINER): XYLENE-1000#

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This you information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this: product so that your files remain up-to-date

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

#### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen---Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP). the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible - At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ianition is present

CNS: Central Nervous System Depressant.

COR: Corrosive Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye resules.

FBL: Flammable - At temperatures under 100°F., chemical gives off enough ignite if a source of ignition is present.

HTX: Highly Toxic... The probable lethal dose for a 70 kg (150 lb.) man; teaspoonful or more.

ING: Ingestion—A primary route of exposure through swallowing a liquid INH: Inhalation—A primary route of exposure through swallowing a liquid INH: Inhalation—A primary route of exposure through swallowing a liquid INH: Inhalation—A primary route of exposure through swallowing a liquid INH: Inhalation—A primary route of exposure through swallowing a liquid INH: Inhalation—A primary route of exposure through swallowing a liquid INH: Inhalation—A primary route of exposure through swallowing a liquid INH: Inhalation—A primary route of exposure through swallowing a liquid INH: Inhalation—A primary route of exposure through swallowing a liquid INH: Inhalation—A primary route of exposure through swallowing a liquid INH: Inhalation—A primary route of exposure through swallowing a liquid INH: Inhalation—A primary route of exposure through swallowing a liquid INH: Inhalation—A primary route of exposure through swallowing a liquid INH: Inhalation—A primary route of exposure through swallowing a liquid INH: Inhalation—A primary route of exposure through swallowing a liquid INH: Inhalation—A primary route of exposure through swallowing a liquid INH: Inhalation—A primary route of exposure through swallowing a liquid INH: Inhalation—A primary route of exposure through swallowing a liquid INH: Inhalation INH: Inhalation INH: Inhalation INH: INHALATION INHAL

ING: Ingestion—A primary route of exposure unrough swampung and INH: Inhalation—A primary route of exposure through breathing of aport (IRR: Irritant—Causes reversible effects in living tissues (e.g. inflating tissues). N/A: Not Applicable—Category is not appropriate for this product.

N/D: Not Determined-Insufficient information for a determination for

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit - The time-weighted-average exposure value establish er epeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer—Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value.--A time weighted average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic—The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PELITEV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This timeweighted average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association and is provided strictly, for: those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product-line. Primary Route of second control of the control Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a deneralizedsystemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, driff, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner, and in the accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

#### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which TOO we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.



ZEP MANUFACTURING COMPANY P.O. BOX 2015 ATLANTA, GEORGIA 30301

ASHGROVE CEMENT WEST INC 13939 N RIVERGATE BLVD BLVD PORTLAND, OR 97203-6608

## MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION.

03/29/94

**ISSUE DATE: 04/23/90 SUPERSEDES:** 06/09/89

ZEP SCHEEN CLEAN PRODUCT NO.: 0070

Aerosol VET/CRT Screen Cleaner

SECTION I - EMERGENCY CONTACTS

TELEPHONE:

(404) 352-1680

BETWEEN 8:00 AM - 5:00 PM (EST)

MEDICAL EMERGENCY:

(404) 435-2973 (404) 351-2952

NON-OFFICE HOURS, WEEKENDS AND HOLIDAYS, PLEASE CALL YOUR

(404) 432-2873

LOCAL POISON CONTROL

TRANSPORTATION EMERGENCY:

(404) 922-0923 CHEMTREC:

**TOLL-FREE - ALL CALLS RECORDED** 

1-800-424-9300 DISTRICT OF COLUMBIA:

(202) 483-7616

**ALL CALLS RECORDED** 

SECTION II - HAZARDOUS INGREDIENTS

**EFFECTS** TLV % IN (SEE REVERSE) PROD. DESIGNATIONS \* ISOPROPYL ALCOHOL \*\* ipa; dimethylcarbinol; 2-propanol; CAS# 67-63-0; RTECS# NT8050000; OSHA PEL-400 IRR FBL 400 10-20 PPM; OSHA/ACGIH STEL-500 PPM

ETHYLENE GLYCOL MONOBUTYL ETHER \* 2-butoxyethanol; butyl cellosolve; CAS# 111-76-2; RTECS# KJ8575000; OSHA PEL (SKIN)- 25 ppm

25

TOX IRR CBL

< 5

@ Identifies chemicals listed under SARA-Section 313 for release reporting

#### SECTION III - HEALTH HAZARD DATA

Special Note: MSDS data pertains to the product as dispensed from the container. Adverse health effects would not be expected under recommended conditions of use (diluted) so long as prescribed safety precautions are practiced.

Acute Effects of Overexposure:

Eye Irritant. Eye contact may produce stinging, burning, inflammation, and in extreme cases may produce corneal damage. Exposure may be irritating to skin, and upper respiratory tract. Accumulation of harmful quantities of vapor is preceded by severe irritation which makes overexposure unlikely. Overexposure can result in mild narcotic effects, including flushing, headache, dizziness, and nausea. Inhalation of aerosol mist may produce chemical pneumonia.

Chronic Effects of Overexposure:

beated or prolonged, skin contact may produce some dryness of skin. Chronic effects from alcohol vapors are rare and would result from severe, prolonged, and eated contact, which is usually precluded by irritation. In most extreme cases, narcosis, unconsciousness, and death could result. Animal studies indicate a potential for liver, kidney, or red blood cell damage. Relevance of these studies or exposure levels which might produce these effects in humans has not been established. None of the hazardous ingredients are listed as carcinogens by IARC, NTP, & OSHA

Est'd PEL/TLV: N/A

Primary Routes of Entry: Inh, Skin.

HMIS Codes: HEALTH 1;FLAM. 1;REACT. 1;PERS. PROTECT. - ;CHRONIC HAZ. YES

FIRST AID PROCEDURES:

Immediately flush contaminated skin with plenty of water for at least 15 minutes. Get medical attention if irritation develops

Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting upper and lower lids. Get medical attention at once. Move exposed person to fresh air. If irritation persists, get medical attention promptly.

If this product is swallowed, do not induce vomiting. If victim is conscious give plenty of water to drink. Get medical attention at once.

Inhale:

Ingest:

SECTION IV - SPECIAL PROTECTION INFORMATION

Protective Clothing: Eye Protection:

The use of neoprene, nitrile or natural rubber gloves is strongly recommended, especially for prolonged contact. Wear tight-fitting splash-proof safety glasses especially if contact lenses are worn.

Respiratory Protection:

Ventilation:

If ventilation is inadequate, wear a properly fitting MSHA or OSHA-approved respirator.

Ventilation should be equal to outdoors. Use exhaust fans and/or exhaust hood in enclosed spaces.

SECTION V - PHYSICAL DATA

Boiling Point (°F):

205F APPROX.

Specific Gravity:

Vapor Pressure (mmHg): Evaporation Rate (WATER = 1): pH (use dilution of N/A ):

N/A 1.0 N/A

Percent Volatile by Volume (%):

COMPLETE

Vapor Density (air = 1): N/A

Solubility in Water: COMPLETE pH (concentrate): 10.0
Appearance and Odor: CLOUDY, THIN, COLORLESS LIQUID WITH PLEASANT FRAGRANCE.

SECTION VI - FIRE AND EXPLOSION DATA

Flash Point (\*F) (method used): Flammable Limits:

NOT FLAMMABLE (CSMA) LEL N/A UEL N/A

Extinguishing Media: Special Fire Fighting:

WATER

Unusual Fire Hazards:

DIRECT WATER ONTO CANS TO PREVENT BURSTING PRESSURIZED CONTAINER. MAY BURST IF HEATED ABOVE 120F

#### ZEP MANUFACTURING COMPANY

#### MATERIAL SAFETY DATA SHEET PAGE 2 SECTION VII - REACTIVITY DATA

**DOT Label/Placard: ORM-D** 

Stability: Incompatibility (avoid):

Stable

Polymerization: Hazardous Decomposition: Heat, open flame, spark, and oxidizing agents.

Will not occur.

May decompose to form toxic/corrosive gases if exposed to high heat.

#### SECTION VIII - SPILL AND DISPOSAL PROCEDURES

Steps to be Taken in Case Material is Released or Spilled:

Observe safety precautions in sections 4 & 9 during spill clean-up. Large spills are unlikely due to packaging. Spill may be absorbed on an inert absorbent (e. Zep-O-Zorb), placed in a suitable container for disposal. Wash area thoroughly with a detergent solution and rinse well with water. Waste Disposal Method:

Product is consumed in use. Do not crush, puncture or incinerate spent containers. Large numbers of aeroso! containers may require handling as a hazardous waste, but in most states total hazardous waste quantities less than 220 lbs per month may allow disposal in a chemical or industrial waste landfill. Consult local, state and federal agencies for the proper disposal method in your area.

RCRA Hazardous Waste Numbers: D001

#### SECTION IX - SPECIAL PRECAUTIONS

Precautions to be Taken When Handling and Storing:
STORE BELOW 120F, AWAY FROM HEAT OR OPEN FLAMES. STORE OUT OF DIRECT SUNLIGHT. Do not breathe spray mists or vapors. DO NOT PUNCTURE OR INCINERATE AEROSOL CANS. Keep out of the reach of children.

#### SECTION X - TRANSPORTATION DATA

**DOT Proper Shipping Name: CONSUMER COMMODITY** 

DOT Hazard Class: ORM-D

DOT I.D. Number: N/A

EPA TSCA Chemical Inventory: ALL INGREDIENTS ARE LISTED

EPA CWA 40CFR Part 117 substance (RQ in a single container): : N/A

#### NOTICE

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Co. is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. Zep Manufacturing is concerned for your health and safety. Zep products can be used safely with proper protective equipment and proper handling practices consistent with label instructions and the MSOS. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pres surize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, or other sources of ignition; they may explode or develop harmful vapors and possibly cause injury or death. Clean empty containers by triple rinsing with water or an appropriate solvent. Empty containers must be sent to a drum reconditioner before reuse.

### TERMS AND ABBREVIATIONS USED IN THE MSDS: BY SECTION ALPHABETICALLY:

SECTION II: HAZARDOUS INGREDIENTS

CAR: Carcinogen - A chemical listed by the National Toxicol-ogy Program (NTP), the International Agency for Research on Cancer (IARC) or OSHA as a definite or possible human cancer causing agent.

CAS #; Chemical Abstract Services Registry Number - A universally accepted numbering system for chemical sub-

can be stances.

CBL: Combustible - At temperatures between 100°F and 200°F chemical gives off enough vapor to ignite if a source of ignition is present as tested with a closed cup tester.

CNS: Central Nervous System depressant reduces the activity of the brain and spinal cord.

COR: Corrosive - Causes irreversible alterations in living tissue (e.g. burns).
DESIGNATIONS; Chemical and common names of hazardous

ingredients.
E(A): Eye Irritant Only - Causes reversible reddening and/or

inflammation of eye tissues.

EXPOSURE LIMITS, The time weighted average (TWA) air-

without any expected adverse effects. Primary sources include ACGIH TLV's, and OSHA PEL's (TWA, STEL and ceiling limits).

ACGIH; American Conference of Governmental Industrial

Hygienists.

CEILING; The concentration that should not be exceeded

in the workplace during any part of the working exposure.

OSHA: Occupational Safety and Health Administration

PEL: Permissible Exposure Limit- A set of time weighted average exposure values, established by OSHA, for a normal 8-hour day and a 40-hour work week.

PPM; Parts per million - unit of measure for exposure

(S) SKIN: Skin contact with substance can contribute to

overall exposure. . STEL; Short Term Exposure Limit- Maximum concentration

for a continuous 15-minute exposure period. TLV; Threshold Limit Value - A set of time weighted average exposure limits, established by the ACGIH, for a normal 8-hour day and a 40-hour work week.

Standard - 29 CFR 1910.1200

HTX; Highly toxic - the probable lethal dose for 70 kg (150 lb.) man and may be approximated as less than 6 teaspoons (2 tablespoons).

teaspoons (2 tablespoons).

IRR; Irritant - Causes reversible effects in living tissues (e.g. inflammation) - primarily skin and eyes.

N/A; Not Applicable - Category is not appropriate for this

product.

N/D; Not Determined - Insufficient information for a deter-

mination for this item.

RTECS#; Registry of Toxic Effects of Chemical Substances

an unreviewed listing of published toxicology data on chemical substances.

SARA; Superfund Amendments and Reauthorization Act -Section 313 designates chemicals for possible reporting for the Toxics Release Inventory.
SEN; Sensitizer - Causes allergic reaction after repeated

exposure. TOX; Toxic - The probable lethal dose for a 70 kg (150 lb.)

man is one ounce (2 tablespoons) or more.

#### SECTION III: HEALTH HAZARD DATA

ACUTE EFFECT: An adverse effect on the human body from a single exposure with symptoms developing almost immediately after exposure or within a relatively short time. CHRONIC EFFECT, Adverse effects that are most likely to

occur from repeated exposure over a long period of time. EST'D PEUTLV; This estimated, time-weighted average, exposure limit, developed by using a formula provided by the ACGIH, pertains to airborne concentrations from the product as a whole. This value should serve as guide for provid-ing safe workplace conditions to nearly all workers. HMIS CODES; Hazardous Material Identification System - a

HMIS CODES, Hazardous Material Identification System - a rating system developed by the National Paint and Coating Association for estimating the hazard potential of a chemical under normal workplace conditions. These risk estimates are indicated by a numerical rating given in each of three hazard areas (Health/Flammability/Reactivity) ranging from a low of zero to a high of 4. A chronic hazard is indicated with a yes. Consult HMIS training guides for Personal Protection letter codes which indicate necessary protective

equipment.

PRIMARY ROUTE OF ENTRY; The way one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific organ toxic effect.

ING; Ingestion - A primary route of exposure through swallowing of material.

INH; Inhalation - A primary route of exposure through breathing of vapors.

SKIN; A primary route of exposure through contact with

the skin.

#### SECTION IV: SPECIAL PROTECTION INFORMATION

Where respiratory protection is recommended, use only MSHA and NIOSH approved respirators and dust masks. MSHA; Mine Safety and Health Administration NIOSH; National Institute for Occupational Safety and

SECTION V: PHYSICAL DATA

EVAPORATION RATE; it refers to the rate of change from the liquid state to the vapor state at ambient temperature and pressure in comparison to a given substance (e.g. water).

pH: A value representing the acidity or alkalinity of an aqueous solution (Acidic pH = 1; Neutral pH = 7; Alkaline

PERCENT VOLATILE; The percentage of the product (figuid or solid) that will evaporate at 212°F and ambient pressure. SOLUBILITY IN WATER: A description of the ability of the product to dissolve in water.

#### SECTION VII: REACTIVITY DATA

HAZARDOUS DECOMPOSITION; Breakdown products exp. ed to be produced upon product decomposition or fire. INCOMPATIBILITY; Material contact and conditions to avoid to prevent hazardous reactions.

POLYMERIZATION; Indicates the tendency of the product's

molecules to combine in a chemical reaction releasing ex cess pressure and heat.

STABILITY; Indicates the susceptibility of the product to spontaneously and dangerously decompose.

#### SECTION VIII: SPILL AND DISPOSAL PROCEDURES

RCRA WASTE NOS; RCRA (Resource Conservation and Re-covery Act) waste codes (40 CFR 261) applicable to the disposal of spilled or unusable product from the original

### SECTION X: TRANSPORTATION DATA

CWA; Clean Water Act

RQ; Reportable Quantity - The amount of the specific ingredient that, when spilled to the ground and <u>can enter a</u> storm sewer or natural watershed, must be reported to the National Response Center, and other regulatory agencies. TSCA: Toxic Substances Control Act - a federal law requiring all commercial chemical substances to appear on an inventory maintained by the EPA.

#### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and out products of the scale of the second state of the second sta information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings, and advisories in the product's label and Material Safety Data Sheet.

(Notice Revised 8/91)

### MATERIAL SAFETY DATA SHEET 198

NURNBERG SCIENTIFIC 6310 S.W. Virginia Portland, Oregon 97201 (503) 246-8297

```
Preparation Cate
Date Sent to Customer . . . : UUL 11, /
(809) 354-9200
Chemtrec Emergency Number:
1-800-424-9300
                         11
                NFPA HAZARD RATINGS
  mealth ....: 1
Reactivity : 0
                           Flammability ...: 3
                           Special Hazards.:
```

trapported as

SECTION I - GENERAL INFORMATION

AX0115 AX0110 Catalog Number(s): AX0120 AX012 AX0115P AXC116 . AXO118 AXO125 AX0120S AXO120T

Chemical Name...: Acetone Trade Name....: Dimethyl Ketone; 2-Propanone C.A.S. Number...: 87-64-1

Chemical Family..: Ketone Formula..... CH3COCH3

Molecular Weight: 58.08 DOT Shipping Name: Acetone DOT Number.....: UN1090

#### SECTION II - HAZARDOUS INGREDIENTS

Acetone may contain trace amount of Benzene (less than 0.002%).

Benzene (CAS#'71-43-2) has been found to cause cancer.

Notification of carcinogenic ingredients in quantity less than 0.1% is not required under Federal Hazard Communication Law.

#### SECTION III- PHYSICAL DATA

Boiling Point (C 780 mm Hg):: 56C
Melting Point (C)....: - 94C
Specific Gravity(H20 = 1)...: 0.7905
Vapor Pressure..(mm Hg)....: 184
Percent Volatile by Vol (%)..: 89.9+ 20C Vapor Density (Air=1)..... 2.0 Vapor Density (AIR\*1)..... 2.0 Evaporation Rate (BuAc=1)....: 14.48 Solubility in Water (%).....: Miscible Appearance and Odor......: Colorless Iiquid; pungent odor.

#### SECTION IV - FIRE & EXPLOSION HAZARD DATA

Flash Point (F).....: OF (CC) Flammable Limits LEL %.: 2.6 Flammable Limits UEL %.: 12.8 Extinguishing Manual

Extinguishing Media...:
Dry chemical, "Alcohol" foam, Water spray, CO2.
Use water spray to cool exposed containers

Fire Fighting Proc. . .

Wear self-contained breathing apparatus. Fire & Expl. Hazards...: Dangerous fire and explosion hazard. Dangerous fire and explosion hazard. Vapor can travel distances to ignition source and flash back. Hot organic chemical vapors or mists are susceptible to sudden spontaneous combustion when mixed with air. Ignition may occur at temperatures below published autoignition or ignition temperatures. Ignition temperatures decrease with increasing vapor volume and vapor/air contact time and are influenced by pressure changes. Ignition may occur at typical elevated temperature process conditions, especially in process operating under vacuum if subjected to sudden ingress of air, or outside process equipment operating under elevated pressure if sudden escape of vapors or mists to the atmosphere occurs. phere occurs.

#### SECTION V - HEALTH HAZARD DATA (ACUTE AND CHRONIC)

ACGIH TLV/OSHA PEL (TWA).....: 750 ppm; STEL 1000 ppm Toxicity Data.....:

orl-rat LDSO: 5800 mg/kg ihl-hmn TCLo: 500 ppm

Symptoms of Exposure .....:
Harmful if inhaled or swallowed. High concentrations or prolonged exposure causes headache, dizziness, nausea, irritation of eyes and respiratory tract, narcosis and eventually unconsciousness.
May cause damage to Central Nervous System, liver and kidneys, Prolonged or repeated skin contact may cause irritation, Eye contact causes irritation.
Animal studies show adverse effects on fertility when females were exposed chronically during pregnancy.

Medical Cond. Aggravated by Exp: Skin conditions, pregnancy.

```
Routes of Entry................... Inhalation, ingestion or skin contact.
breathing has stopped
     Ingestion: If conscious, drink water and induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person.
     Remove contaminated clothing and wash before reuse.
                                      SECTION VI - REACTIVITY DATA
Stability...
                             ..... YES
Conditions to Avoid ....: Heat, contact with ignition source'
Materials to Avoid.....: ( ) Water (X) Acids ( ) Bases ( ) Corrosives (X) Oxidizers (X) Other: Potassium t-Butoxide; Nitric and Sulfuric Acid Mixture, Bromine, Chlorine
                                                                                               ( ) Bases
Hazardous Polymerization.: Does not occur.
Hazardous Decomposition..: COx
                     SECTION VII - ENVIRONMENTAL PROTECTION PROCEDURES
Spill Response:
-Dike spill; take up with absorbent; containerize for proper disposal Waste Disposal: To be performed in compliance with all current local, state and federal regulations.
                   SECTION VIII - SPECIAL PROTECTION INFORMATION'
Ventilation, Respiratory Protection, Protective Clothing, Eye Protection:
      Respiratory Protection: If workplace exposure limit(s) of product or any component is exceeded (see TLV/PEL), a NIOSH/MSHA approved air supplied respirator is advised in absence of proper environmental control. OSHA regulations also permit other NIOSH/MSHA respirators (negative pressure type) under specified conditions (see your safety equipment supplier). Engineering and/or administrative controls should be implemented to reduce exposure
    Material should be handled or transferred in an approved fume hood or with adequate ventilation

Protective gloves (Butyl rubber, CPE, Polyurethane or equivalent) should be worn to prevent skin contact
    Safety glasses with side shields should be worn at all times
                    SECTION IX - SPECIAL PRECAUTIONS
Handling & Storage
    Keep container closed
     Store in a cool area away from ignition sources and exidizers
     Do not breathe vapor
     Do not get in eyes
     Avoid prolonged or repeated skin contact
Electrically ground all equipment when handling this product
Retained residue may make empty containers hazardous; use caution!
Work/Hygienic Practices: Wash thoroughly after handling. Do not take internally. Eye wash and safety equipment should be readily available.
                                   SECTION X - OTHER INFORMATION
    Tests on laboratory animals indicate material may produce adverse mutagenic and reproductive effects.
```

Revision History.....: 8/26/81, 7/01/83, 6/84, 6/85, 9/12/86, 6/5/87, 8/28/87, 10/27/87, 3/21/89, 10/6/89, 5/1/90

N/A = Not available:

. 227

10:42

動作がし

MSDS-AX0110 Page #: 02

....

1986年 网络圆翅目

```
MATERIAL SAFETY DATA SHEET ESH
                                                                    Preparation Date ...... OCT 27, /87
 EM SCIENCE
. A Division of EM Industries
                                                                    Information Phone Number:
(809) 354-8200
Chemtrec Emergency Number:
1-800-424-9300
 111 Woodcrest
 Cherry Hill, N.J. 08034-0395
                                                                                             NFPA HAZARD RATINGS
                                                                       Health .... 2
Reactivity : 0
                                                                                                             Flammability ...: 3
Special Hazards.: N/A
                                                  SECTION I - GENERAL INFORMATION
     Catalog Number(s):
TX0745 TX0750
                                                  TX0734
                                                                     TX0735
                                                                                         TX0735P
                                                                                                             TX0735S
                                                                                                                                  JX0737
     Chemical Name...: Toluene
Trade Name....: Toluene
C.A.S. Number...: 108-88-3
Chemical Family.: Aromatic Hydrocarbon
     Formula.....: C8H5CH3
Molecular Weight: 92.14
DOT Shipping Name: N/A
DOT Number....: N/A
                                              SECTION II - HAZARDOUS INGREDIENTS
     -None other than specified product
                                                       SECTION III- PHYSICAL DATA
     Boiling Point (C 760 mm Hg): 110.8C Melting Point (C)....: -95C Specific Gravity(H20 * 1)...: 0.868 Vapor Pressure..(mm Hg)...: 21.88 Percent Volatile by Vol (%)..: 99+% Vapor Density (Air=1)...: 3.2 Evaporation Rate (BuAc=1)...: 2.24 Solubility in Water (%)...: insolu
     Solubility in Water (%)....: insoluble
Appearance and Odor.....: clear, colorless liquid
           aromatic odor
                                              SECTION IV - FIRE & EXPLOSION HAZARO DATA
     Flash Point (F).....: 40F (tcc)
Flammable Limits LEL %.: 1.3
Flammable Limits UEL %.: 7.1
Extinguishing Media...:
CO2, Dry chemical, Foam
     Water spray to cool exposed containers
Fire Fighting Proc....:
Wear self-contained breathing apparatus; see Section 10
     Fire & Expl. Hazards..
          -Vapor can travel distance to ignition source and flash back
                         SECTION V - HEALTH HAZARD DATA (ACUTE AND CHRONIC)
     ACGIH TLV/OSHA PEL (TWA)....:

100 ppm (TWA)

Toxicity Data.....:

-ihl-man TCLo: 100 ppm *

ihl-mus LC50: 5320 ppm/8H

Symptoms of Exposure ....:

-Harmful or fatal if swallowed Vapor harmful if inhaled

Symptoms beadache dizziness
                                                                       or1-rat LD50: 5000 mg/kg
           Vapor narmiul II Inhales
Symptoms: headache, dizziness, nausea, diarrhea, respiratory
irritation, central nervous system depression, unconsciousness,
liver, kidney and lung damage
Contact can cause severe eye irritation
     May cause skin irritation

Medical Cond. Aggravated by Exp: Data not available.

Routes of Entry.....: Inhalation, ingestion or skin contact.

Carcinogenicity.....: See Comments, Section X; if no information appears, the material is not listed as a cancer causing agent.
     Eyes: immediately flush thoroughly with water for at least 15 minutes Ingestion: do not induce vomiting; get immediate medical attention Skin: wash thoroughly with soap/water Inhalation: remove to fresh air; give artificial respiration if
                       breathing has stopped
                                                        SECTION VI - REACTIVITY DATA
     Stability..... YES Conditions to Avoid ....:
     -Heat; contact with ignition source
Materials to Avoid.....: ( ) Water ( )
( ) Bases ( ) Corrosives (X) Oxidizers
(X) Other (specify)-Strong mineral acids
Hazardous Polymerization.: Data not available.
                                                                                             ( ) Acids
```

```
3.7.为何遭到的情况,从2016年来产于2016年代的15.5
Hazardous Decomposition. .: -COx, HydrocarLons 19 7, 7, 7, 50
                SECTION VII - ENVIRONMENTAL PROTECTION PROCEDURES
Spill Response:
  -Eliminate ignition sources; take up with absorbent
Containerize for proper disposal Waste Disposal: To be performed in compliance with all current local, state and federal regulations.
               SECTION VIII - SPECIAL PROTECTION INFORMATION
Ventilation, Respiratory Protection, Protective Clothing, Eye Protection:
  -Material should be handled or transferred in an approved fume hood or with adequate ventilation
   Protective gloves (Viton, Polyurethane, or equivalent) should be worn to prevent skin contact
    Safety glasses with side shields should be worn at all times
                 SECTION IX — SPECIAL PROTECTION INFORMATION -
Handling & Storage ....:
   -Keep container closed
    Store in a cool area away from ignition sources and exidizers
    Do not breathe vapor
   Do not get in eyes, on skin or on clothing
Do not take internally
Retained residue may make empty containers hazardous; use caution! Work/Hygienic Practices: Wash thoroughly after handling. Do not take
    internally. Eye wash and safety equipment should be readily available.
                            SECTION X - OTHER INFORMATION
   6/87
                                                                              Rev.
Revision History....
                          ....: 08/01/81, N/A
OCT 27, '87
N/A = Not available:
                                                               . 1 .
                                                    operation in
                                                  ខាតាក្សស្ថិត ចំណាត់ ក្រាត់កាន់សមាក
                                                 .... 2S
                                                         Stend), cuis to Averd ....
                             "Host, demisor with ignifion course

Materials to avoid..... () esten (
(.) beses ( ) Commosives (X) Oxidizano
(X) Other (specify)-Strong biochal ecido
[Itzandous Folymerizetion.] Data bot evailable.
```

2 1 34 1 3



# Gillette Medical Evaluation Laboratories

401 Professional Drive Gaithersburg, Maryland 20879 301-590-9781

MAT	ERIAL SA	۹FE.	TY DATA SH	EET			
NAME: LIQUID PAPER CORRECTIO	N FLUID (W	IITE .					
CAS NO: NA			Effective	Date: 8/22/9	90 R	ev: 1	
AL - IDENTIFICATION							
Composition *		%	Formula: Mixtu	re			
1,1,1-Trichloroethane (71-55-   Titanium Dioxide (13463-67-7)	6)				.,,	·	
Resin(s)			Molecular Weight: N	A			
Mineral Spirits (64741-65-7)	וד וס ד		Synonyms				
Di(2-ethylhexyl)Phthalate (11   Mustard Oil (57-06-7)	7-01-77		Liquid Paper				
Colorant(s)			1				
BL - PHYSICAL DATA							
Boiling Point	Mei	ting Po	int	Free	zing Point		
165 °F 74 °C	NA NA	_ o <sub>F</sub>	NA °c	NA	_ o <sub>F</sub>	NA °C	Ç
Specific Gravity (H <sub>2</sub> O=1)	Vapori	Density	/ (air=1)	Vapor Pressure	@ <u>58</u>	١٥	F
~1.7		~ 4.				mmHg	
					**		
Evaporation 1 ( Ether -1)	Satu (by volume @ )	ration		Autoigniti	on Temperati	0	C
Slower	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	NA			NA NA		
% Voiatiles (by volume)	Solut	ifity in	Water			N	
~50		<1%		pH	NA	name or too	
		<del></del>			.,		
Appearance/Odor White or c	olored flu	id wi	th a pungent so	lvent odor			
Flash Point and > 200°F, >9 Test Method(s)	3°C (Clos	ed Cu	p) Product is	non-flamma	ble.		
Flammable Limits in Air (See Section			7				
(% by volume) Lower	NA_	%	Uppi	or <u>NA</u>	<del></del>		
CL - HEACTIVITY							
Stability Conditions to Avoid			Polymerization	Conditions to A	void		
stable X Contact with cother high tem	•	or	may occur	AN			
unstable source.	per dicore		will not occur X				
Incompatible Materials For solvent:	strong alk	alis,	Hazardous Decompo	sition Products	Thermal d	egrada-	
oxidizers; aluminum, zinc and reactive metals (e.g., potass		m,	tion, e.g., or amounts of pho	pen flame, c ospene, hydr	ogen chlo	ride	
magnesium),			and chlorine.				
HEMULTIPLEINGREDIENTSINC	LUDECASIA	IUMB	ERS FOR EACH	NA=	NOTTAVAL	KABUE	÷
Footnotes:   Physical data, except	7 1/1/1 h	lee :	and Sportfic Gr	avitu motame	to		
l,1,1-Trichloroethai		(49 (	and observe an	urisy, ruicis	μ <del>ω</del>		

CAMPL # 202

#### D. - HEALTH HAZARD DATA

Omupational Exposure Limits (PEL'S, TLV'S, etc.)

Hour TWA's: 1,1,1-Trichloroethane - 350 ppm (OSHA/ACGIH)

Titanium Dioxide - 10 mg/cu m (OSHA/ACGIH)

Di(2-ethylhexyl)Phthalate - 5 mg/cu m (OSHA/ACGIH) lese levels are not anticipated under foreseeable use conditions.

Warning Signals

NA

#### Routes/Effects of Exposure

1. Inhalation No adverse effects anticipated from normal use. If vapors are deliberately concentrated and inhaled (abuse), following symptoms may occur: respiratory irritation, dizziness, drowsiness, headache, nausea, unconsciousness, cardiac sensitization (abnormal heartbeat), coma and death. (Mustard oil is added to the product as an abuse deterrent.)

2. Ingestion

No adverse effects anticipated from normal use. Depending on amount ingested, most of the symptoms described above may occur. Estimated LD $_{50}$  in rats is greater than 5 ml/kg or between 1 pint and 1 quart in humans (ref. Gosselin, Smith and Hodge, Clinical Toxicology of Commercial Products, 5th ed., 1984).

a. Contact

No adverse effects anticipated from normal use. Irritation may occur if contact is prolonged/repeated.

b. Absorption

No adverse effects anticipated from normal use. Solvent can be absorbed through skin (prolonged contact), but not likely in acutely toxic amounts. Estimated  $LD_{50}$  in rabbits is greater than 5 ml/kg.

4. Eve Contact

Irritation

5. Other

See Statement Below

#### E - ENVIRONMENTAL IMPACT

1. Applicable Regulations

NA

- 2. DOT Hazard Class -
- DOT Shipping Name —

Environmental Effects

ΝA

Other: Based on animal feeding studies, Di(2-ethylhexyl)Phthalate or DEHP is listed by IARC and NTP as a possible human carcinogen, if ingested. Normal use of this product would result in no ingestion of DEHP. There is no evidence of cancer due to isolated incidents of ingestion, such as accidental ingestion. A quantitative risk assessment demonstrates that DEHP in Liquid Paper is not a significant risk to humans because of its low concentration and low exposure potential.

F EXPOSURE CONTROL METHODS
Engineering Controls
None under normal use conditions
Eye Protection
None under normal use conditions
Skin Protection
None under normal use conditions
Respiratory Protection
None under normal use conditions
Other
Product is non-hazardous when used as directed in an office/room with normal
air circulation.
G. WORK PRACTICES
Handling and Storage
No unusual handling or storage when used as directed; when stored in large
quantities (as in warehouse), it should be in a well-ventilated, cool area.
Normal Clean Up
HOTHER CHEST OF
Pick up spills with towels, tissues, etc.
Weste Disposal Methods
Dispose in accordance with applicable federal, state and local laws.
GMEL # coc

#### H - EMERGENCY PHOCEDURES

Steps to be taken if material is released to the environment or spilled in the work area.

Not applicable

#### Fire and Explosion Hazard

Concentrated vapor of 1,1,1-Trichloroethane can burn, producing hazardous decomposition products (Sec. C).

#### Extinguishing Media

As for adjacent fire: dry chemical, foam, carbon dioxide, water fog

#### **Firefighting Procedures**

In fires involving large quantities of product, use self-contained breathing apparatus.

### I. - FIRST AID AND MEDICAL EMERGENCY PROCEDURES

#### Eyes

Flush with plenty of water. If irritation persists, obtain medical attention.

Skin

Wash with soap and water.

#### Inhalation

No adverse effects anticipated from normal use. In an abuse situation, remove from source of exposure. Treat symptomatically. Oxygen may be administered. Seek medical attention immediately and refer to "Notes to Physician" below.

#### Inpestion

Consult physician.

#### Notes to Physician

The formulation contains less than 5% petroleum distillates. Induction of vomiting should be considered at the discretion of the physician. Do not use sympathomimetic agents (e.g., epinephrine) in halogenated hydrocarbon poisoning because of possible induction of ventricular fibrillation.

The information contained in the Meterial Safaty Data Sheet is based on data considered to be accurate, however, no warranty is expressed or implied regarding the accuracy of the data or the results to be obtained from the use thereof.

MSDS-3 (8/88)

GMEL # 596



## Gillette Medical Evaluation Laboratories

401 Professional Drive Gaithersburg, Maryland 20879 301-590-9781

## MATERIAL SAFETY DATA SHEET

NAME: LIQUID PAPER CORRECTION CAS NO: NA	N FLUID (WHITE	•	F-4, LPCF-8, LPCF-9) Date: 8/22/90 Re	ov: 1
AL - IDENTIFICATION				
Composition* 1,1,1-Trichloroethane (71-55- Titanium Dioxide (13463-67-7) Resin(s) Mineral Spirits (64741-65-7) Di(2-ethylhexyl)Phthalate (11 Mustard Oil (57-06-7) Colorant(s)	6)	Formula: Mixtu Molecular Weight: N Synonyms Liquid Paper	A	
BL + PHYSICAL DATA				
Boiling Point	Melting Po NA °F		Freezing Point NA OF	NA°c
Specific Gravity (H <sub>2</sub> O±1) ~1.7	Vapor Density ~ 4.		Vapor Pressure @68	oF mmHg
Evaporation (	Saturation (by volume @NA	_	Autoignition Temperatu ° F NA	o c
% Volatiles (by volume) ~50	Solubility in		рН <u>NA</u>	
Appearance/Odor White or o	colored fluid wi	ith a pungent so	lvent odor	
Flash Point and > 200°F, > Test Method(s)	93°C (Closed Co	up) Product is	non-flammable.	
Flammable Limits in Air (See Section (% by volume) Lower_	on H.) NA *	<b>.</b> Орра	or <u>NA</u> %	
CL - REACTIVITY				
Stability Conditions to Avoid  stable X other high ten unstable source.		Polymerization may occur will not occur   \chi_{\text{Y}}	Conditions to Avoid  NA	
Incompatible Materials For solvent: oxidizers; aluminum, zinc an reactive metals (e.g., potas magnesium).	d other	tion, e.g., or	sition Products Thermal di pen flame, can produc Osgene, hydrogen chlo	e small
IEMULTIPLE INGREDIENTS INC	LUDECASINUMB	ERS FOR EACH	NAMNOTAVAL	<b>PABLE</b>
Foothotes:   Physical data, exce   1.1.1-Trichloroetha		and Specific Gr		
			ÆMÉL → ∠n/	

# THE PRYOR-GIGGEY CO.

DEPENDABLE REFRACTORY SPECIALISTS
WHITTIER CALIFORNIA CHEMALIS WASHINGTON
(213) 945-3781 (206) 748-9295



### TECHNICAL DATA

PHLOCAST COARSE

(Limited)

All data subject to reasonable deviations and not to be used for specification purposes

DESCRIPTION	Coarse grain low cement castable, specifically designed for enhanced flow and simplified installation.		
APPLICATION METHODS	Vibration casting or rodding		
SERVICE TEMPERATURE RANGE	Up to 2800°F		
DRY MATERIAL REQUIRED TO CAST ONE II.	155#		
BULK DENSITY—CURED 230° F	160 pcf		
WATER REQUIRED	5.0 - 6.0% (4-3/4 Pts - 5-3/4 Pts/100#		
PACKAGING	100# bags		
THERMAL CONDUCTIVITY Blu/hr/in/it.*/°F			
PHYSICAL PROPERTIES AFTER FIRING and COOLING	Temp. Density CCS Linear C-704  "F (pcf) (psi) Change (%) (CC Loss)  230 160 11,000 - 7  1500 155 9,000 -0.1 10  2000 156 6,000 -0.2 12  2500 - +1.0 -		
TYPICAL CHEMICAL ANALYSIS (%)	Al <sub>2</sub> 0 <sub>3</sub> 45% Fraa Alumina S10 <sub>2</sub> 47% Cristobalita		
TYPICAL APPLICATIONS	Replaces conventional coarse grain castables with improved strength and abrasion resistance.		



## MATERIAL SAFETY DATA SHEET

#### AND SAFE HANDLING AND DISPOSAL INFORMATION

05/01/91 PAGE 1 OF 3

60-70

30-40

ZEP MANUFACTURING COMPANY RST IN MAINTENANCE PRODUCTS

ISSUE DATE: 09/12/90 / ZEP BRAKE PARTS CLEANER : 1550000

SUPERSEDES: 03/03/70 PRODUCT NUMBER OF DEPOS OF THE SECOND

SECTION I - E M E R G E N C Y C O N T A C T S

P.O. BOX 2015

ATLANTA, GEORGIA 30301

ZEP MANUFACTURING COMPANY TELEPHONE: (404)352-1680 BETWEEN 8:00 AM-5:00 PM (EST) NON-OFFICE HOURS, WEEKENDS, AND HOLIDAYS: AREA CODE 404

435-2973, 994-0899, 351-2952, 971-3347, 432-20**7**3

LOCAL POISON CONTROL CENTER .............

TRANSPORTATION EMERGENCY: OHEMTREC: TOLL FREE 1-800-424-7300 ALL CALLS RECORDED

TLV

EFFECTS

350 IRR CNS

50 CNS IRR CAR

(PPM) (SEE REVERSE) PROD.

DISTRICT OF COLUMBIA (202)483-7616 ALL CALLS RECORDED

SECTION II - M A Z A R D O U S I N S R E D I E N T S

DESIGNATIONS

\*\* 1,1,1-TRICHLOROETHANE \*\* METHYL CHLOROFORM

CHILDROTHEME: CAS# 71-55-6; RTECS# KJ2975000;

OSHA PEL-350 PPM: ACGIH/OSHA STEL-450 PPM

@## TETRACHLOROETHYLENE ## PERCHLOROETHYLENE: PERC:

CARBON BICHLORIDE: CAS# 127-18-4: RTECS# KX3850000

OSHA PEL-25 PPM: ACGIH STEL-200 PPM

@ IDENTIFIES CHEMICALS LISTED UNDER SARA-SECTION 313 FOR RELEASE REPORTING.

SPECIAL NOTE: ADVERSE HEALTH EFFECTS WOULD NOT BE EXPECTED UNDER RECOMMENDED CONDITIONS OF USE SO LONG AS PRESCRIBED SAFETY PRECAUTIONS ARE PRACTICED.

SECTION III - HEALTH HAZARD DATA

ACUTE EFFECTS OF OVEREXPOSURE:

INHALATION OF VAPOR CAN PRODUCE CENTRAL NERVOUS SYSTEM DEPRESSION CHARACTERIZED SY DIZZINESS, HEADACHE, MAUSEA, CARDIAC AND/OR RESPIRATORY DEPRESSION, STUPOR, "MOONSCIOUSNESS AND DEATH, IN EXTREME CASES, EXPOSURE TO HIGH CONCENTRATIONS OF JPOR BY DIRECT CONTACT OR INHALATION CAN BE IRRITATING TO MUCOUS MEMBRANES. SUCH AS EYES AND UPPER RESPIRATORY TRACT. SEVERE EYE EXPOSURE TO LIQUID CAN CAUSE REVERSIBLE EYE DAMAGE. SKIN CONTACT MAY CAUSE A BURNING SENSATION AND REDDENING OF THE SKIN. INTRODUCTION OF SOLVENT TO THE LUNGS, AS IN ASPIRATION OF VOMITUS FLUIDS, MAY CAUSE CHEMICAL PNEUMONIA, EXPOSURE TO THIS PRODUCT MAY AG-GRAVATE EXISTING RESPIRATORY AND CARDIAC COMDITIONS. INHALATION OF AEROSOL MIST MAY PRODUCE CHEMICAL PNEUMONIA.

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.



By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

#### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen—Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL: Flammable—At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic—The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion—A primary route of exposure through swallowing a liquid or solid (see below).

INH: Inhalation—A primary route of exposure through breathing of vapors (see below).

IRR: Irritant—Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable -- Category is not appropriate for this product.

N/D: Not Determined—insufficient information for a determination for this item.

NIOSH; National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer—Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value—A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic—The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time-weighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

#### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.



# MATERIAL SAFETY DATA SHEET

#### AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 2 OF 3

ZEP MANUFACTURING COMPANY

ISSUE DATE: 09/12/90 ZEP BRAKE PARTS CLEANER STEELE STEELE

SUPERSEDES: 03/03/70 PRODUCT NUMBER ... 0290 ... 600 .

SECTION III - H E A L T H H A Z A R D D A T A (CONTINUED)

#### CHRONIC EFFECTS OF OVEREXPOSURE:

REPEATED OR PROLONGED CONTACT BY INHALATION OR SKIN ABSORPTION MAY PRODUCE LIVER OR KIDNEY DAMAGE OR DAMAGE TO THE CENTRAL NERVOUS SYSTEM (CHARACTERIZED BY TING-LING OR NUMBHESS IN THE EXTREMITIES, BLURRED VISION OR CONFUSION). SKIN WHICH IS DEFATTED BY REPEATED EXPOSURE TO SOLVENTS. IS MORE SUSEPTIBLE TO IRRITATION. INFECTION, AND DERMATITIS.

EXPOSURE TO SOME INGREDIENTS IN THIS PRODUCT CAN AGGRAVATE EXISTING LIVER DISEASE OR HEART RHYTHM DISORDERS.

ONE OF THE INGREDIENTS IN THIS PRODUCT HAS BEEN SHOWN TO CAUSE TUMORS IN LABOR-ATORY TEST ANIMALS. THE RELEVANCE OF THESE STUDIES FOR HUMANS HAS NOT BEEN ESTABLISHED.

EST'D PEL/TLV: 201 PPM PRIMARY ROUTES OF ENTRY: INH, SKIM.

HMIS CODES: HEALTH 1; FLAM. 1; REACT, 1; PERS. PROTECT. B : CHRONIC HAZ. YES

FIRST AID PROCEDURES:

SKIN : WASH CONTAMINATED SKIN THROUGHLY WITH SOAP OR A MILD DETERGENT. APPLY A

SKIN CREAM WITH LANGLIN. GET MEDICAL ATTENTION IF IRRITATION PERSISTS.

EYES : IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, OC-CASIONALLY LIFTING UPPER AND LOWER LIDS. GET MEDICAL ATTENTION AT ONCE.

INHALE: MOVE EXPOSED PERSON TO FRESH AIR AT ONCE. IF BREATHING HAS STOPPED, PER-

FORM ARTIFICIAL RESPIRATION. GET MEDICAL ATTENTION IMMEDIATELY.

INGEST: IF SWALLOWED, DO NOT INDUCE VOMITING. IF VOMITING OCCURS, KEEP HEAD

BELOW HIP LEVEL. GET EMERGENCY MEDICAL ATTENTION IMMEDIATELY.

SECTION IV - S P E C I A L P R O T E C T I O N I N F O R M A T I O N

PROTECTIVE CLOTHING : WEAR VITON GLOVES OR USE GLOVES WITH DEMONSTRATED

RESISTANCE TO THE INGREDIENTS IN THIS PRODUCT.

: USE TIGHT-FITTING SAFETY GLASSES. CONTACT LENSES SHOULD EYE PROTECTION

NOT BE WORN WHEN WORKING WITH THIS MATERIAL.

RESPIRATORY PROTECTION: IF VENTILATION IS INADEQUATE, WEAR A PROPERLY FITTING

MSHA OR OSHA-APPROVED RESPIRATOR.

: VENTILATION SHOULD BE EQUIVALENT TO OUTDOORS. USE EX-VENTILATION

HAUST FANS AND OPEN WINDOWS IN ENCLOSED SPACES.

SECTION V - P H Y S I C A L D A T A (FOR FILL MATERIAL ONLY)

BOILING POINT (F) : 165-250F SPECIFIC GRAVITY : 1.48
VAPOR PRESSURE(MMHG): APPROX. 100 PERCENT VOLATILE BY VOLUME (%) : 100 : i.42

VAPOR DENSITY(AIR=1): 4.95

SOLUBILITY IN WATER: NEGLIGIBLE PH(CONCENTRATE) : N/A

PH(USE DILUTION OF ): N/A =1): .34

: N/A

APPEARANCE AND ODOR : A THIN, COLORLESS LIQUID WITH A CHLORINATED HYDROCARBON ODOR

SECTION VI - FIRE AND EXPLOSION DATA

(CSMA)

LASH POINT(F) (METHOD USED): MOT FLAMMABLE FLAMMABLE LIMITS LEL 7.0 UEL 15.0

EXTINGUISHING MEDIA : N/A

SPECIAL FIRE FIGHTING: WEAR SELF-CONTAINED POSITIVE PRES. BREATHING APPARATUS. UNUSUAL FIRE HAZARDS : DIRECT WATER ONTO INTACT CONTAINERS TO PREVENT BURSTING.

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.



By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

#### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen—Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of lanition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eve Irritant Only—Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL: Flammable—At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present. HTX: Highly Toxic—The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion—A primary route of exposure through swallowing a liquid or solid (see below).

INH: Inhalation—A primary route of exposure through breathing of vapors (see below).

IRR: Irritant—Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable—Category is not appropriate for this product.

N/D: Not Determined—Insufficient information for a determination for this Item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer—Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value—A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic—The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PELTLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This timeweighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalizedsystemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent. with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

#### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.





# MATERIAL SAFETY DATA SHEET

#### AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 3 OF 3

ZEP MANUFACTURING COMPANY "IRST IN MAINTENANCE PRODUCTS ISSUE DATE: 09/12/90 ZEP BRAKE PARTS CLEANER TO BEST STATES

SUPERSEDES: 03/03/90 PRODUCT NUMBER: 10290

SECTION VII - REACTIVITY DATA

STABILITY

: STABLE

INCOMPATIBILITY (AVOID) : STRONG ACIDS & ALKALIES, OXIDIZERS AND ACTIVE METALS.

POLYMERIZATION : WILL NOT OCCUR.

HAZARDOUS DECOMPOSITION: CARBON DIOXIDE, CARBON MONOXIDE, HYDROGEN CHLORIDE, AND

SMALL AMOUNTS OF PHOSGENE & CHLORINE GAS.

SECTION VIII - S P I L L AND D I S P O S A L P R O C E D U R E S

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

OBSERVE SAFETY PRECAUTIONS IN SECTIONS 4 & 9 DURING SPILL CLEAN-UP. LARGE SPILLS ARE UNLIKELY DUE TO PACKAGING. SPILL MAY BE ABSORBED ON AN INERT ABSORBE ENT (EG ZEP-0-ZORB), PLACED IN A SUITABLE CONTAINER FOR DISPOSAL. WASH AREA THOROUGHLY WITH A DETERGENT SOLUTION AND RINSE WELL WITH WATER.

WASTE DISPOSAL METHOD:

PRODUCT IS CONSUMED IN USE. DO NOT CRUSH, PUNCTURE OR INCINERATE SPENT CONTAIN-ERS. LARGE NUMBERS OF AEROSOL CONTAINERS MAY REQUIRE HANDLING AS A HAZARDOUS WASTE, BUT IN MOST STATES TOTAL HAZARDOUS WASTE QUANTITIES LESS THAN 220 LBS PER MONTH MAY ALLOW DISPOSAL IN A CHEMICAL OR INDUSTRIAL WASTE LANDFILL. CONSULT LOCAL, STATE AND FEDERAL AGENCIES FOR THE PROPER DISPOSAL METHOD IN YOUR AREA.

RORA HAZ. WASTE NOS.: FOOR, DOB9

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN WHEN HANDLING AND STORING:

DO NOT STORE AT TEMPERATURES ABOVE 120F. OR IN DIRECT SUNLIGHT. DO NOT

PUNCTURE OF INCINERATE CONTAINER.

STORE AWAY FROM STRONG ACIDS AND OXIDIZING COMPOUNDS.

KEEP PRODUCT AWAY FROM SKIN AND EYES.

DO NOT BREATHE SPRAY MISTS OR VAPORS.

CLOTHING OR SHOES WHICH BECOME CONTAMINATED WITH SUBSTANCE SHOULD BE REMOVED PROMPTLY AND NOT REWORN UNTIL THOROUGHLY CLEANED.

VAPORS ARE HEAVIER THAN AIR AND WILL ACCUMULATE AT LOW POINTS. VENTILATION SHOULD INCLUDE FLOOR LEVEL EXHAUSTING.

KEEP OUT OF THE REACH OF CHILDREN.

SECTION X - TRANSPORTATION DATA

DOT PROPER SHIPPING NAME

CONSUMER COMMODITY

DOT HAZARD CLASS: N/A

POT I.D: NUMBER : N/A DOT LABEL/PLACARD: ORM-D

JA TSCA CHEMICAL INVENTORY - ALL INGREDIENTS ARE LISTED

EPA EWA 400FR BART 117 SUBSTANCE(RG IN A SINGLE CONTAINER): NONE

MAY 2 4 200 ---

1192 15 1 1 1 1 1 1 1 1 1

#### NOTICE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.

O

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

#### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen—Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only—Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL: Flammable—At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic—The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion—A primary route of exposure through swallowing a liquid or solid (see below).

INH: Inhalation—A primary route of exposure through breathing of vapors (see below).

IRR: Irritant—Causes reversible effects in living tissues (e.g. Inflammation).

N/A: Not Applicable—Category is not appropriate for this product.

N/D: Not Determined—Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer—Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value—A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic—The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time-weighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of Ignition; they may explode and cause Injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

#### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the impreper use products, from incompatible product combinations, or from the failure to follow instructions, warranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the impreper use of the products.

MATIONAL SANITARY SUPPLY CO. 13217 S. Figueroa Street Los Angeles, California 90061 Emergency No. 1-800-535-5053 (INFOTRAC) Call nearest Sales Office for MSDS Information

'ERIAL SAFETY DATA SHEET

SECTION 1. IDENTIFICATION				
Product Name: ACTION D D	ISINFECTANT ER	N	Date Issued: Supercedes: ational Item	09/13/90 10/26/89 #: 1702XX
SECTION 2. INGREDIENTS	CAS NUMBER	PERCENT	EXPOSURE L OSHA PEL	IMITS IN AIR ACGIH TLV OTHER
OCTYL DECYL DIMETHYL AMMONIYM CHLORIDE	6824953	1.14	N/D	N/D
DÍOCTYL DIMETHYL AMMONIYM CHLORIDE DIDECYL DIMETHYL	5538943	0.57	N/D	N/D
AMMONIUM CHLORIDE ALKYL (C14,50%,C12 40%		0.57	N/D	N/D
DIMETHYL BENZYL AMMONIUM CHLORIDE	6824851	1.52	ם/מ	N/D
N/A = Not Applicable; N	D = Not Dete	rmined		
SECTION 3. PHYSICAL DATA				
Boiling Point (F): 212 Vapor Pressure (mm Hg.): Vapor Density (Air=1): N Solubility in Water: SOLI Appearance and Odor: CLE	<18 D JBLE AR GREEN/FLOF	Specific Percent Y Evaporati pH Range: AL SCENT	Gravity (Wat olatile (By on Rate (Wat 12.0	er=1): 1.02 Volume): 86 er =1): 1
Section 4. FIRE AND EXP	LOSION HAZARD	DATA		
Flash Point (Test Method Tammable Limits: LEI inguishing Media: CO2	: NON-FLAMMA L=N/D DRY CHEMICA	BLE UEL=N/ L, FOAM,	D WATER FOG	- 1
Special Fire Fighting Pro USED. COOL AND USE CAN CONTAINERS.	ocedures: NOR UTION WHEN AF	MAL FIRE PROACHING	FIGHTING PRO OR HANDLING	CEDURES MAY BE FIRE-EXPOSED
Unusual Fire & Explosion	Hazards: CON	TAINERS M	AY BURST IN	HEAT.
SECTION 5. REACTIVITY D	ATA			
Stability: STABLE				· · · · · · · · · · · · · · · · · · ·
Incompatibility - Materia CHEMICALS.	als to Avoid:	DO NOT M	IX THIS PROD	UCT WITH ANY OTHER
Hazardous Polymerization	: WILL NOT OC	CUR	•	
Conditions to Avoid: NON				
Hazardous Decomposition	Products: WHI PRO	EN EXPOSED DUCTS OF	TO FIRE PR COMBUSTION.	ODUCES NORMAL
SECTION 6. SPILL, LEAK				
Spill Response: FOR SMAL AND PAIL OR WET PICK USEN UP USING MATERIAL IN A CLOSED CONTROL WASTE WASTE UNDILUTED PRODUCT RECOUNT TO BE REGULATIONS AND LOCAL CONTAINER DISPOSAL: TRIP AND DISCARD IN REGULAR FEDERAL REGULATIONS.	L SPILLS. DII P VACUUM. FOR ABSORBENT MAT ONTAINER FOR FOR DILUTED I VERED FROM SI DISPOSED OF	UTE WITH LARGE SP TERIAL PL DISPOSAL. PRODUCT MA PILLS MAY IN ACCORD	WATER AND PI ILLS DIKE A ACE ALL CONT Y BE FLUSHED BE SENT TO L ANCE WITH FE	CK UP WITH MOP REA TO CONTAIN AMINATED TO SEWER. ICENSED DERAL/STATE Y WITH WATER CAL, STATE AND
		•		•

```
MATERIAL SAFETY DATA SHEET Product Name: MARATHON MAINTAINER Date Issued: 08206/91
                                                                                                                       PAGE 2
Primary Routes of Entry: "SKIN
Symptoms of Overexposure:

Eye Contact: MILD SKIN IRRITANT, PROLONGED OR REPEATED CONTACT

Skin Contact: MILD SKIN IRRITANT, PROLONGED OR REPEATED CONTACT

WITH UNDILUTED PRODUCT MAY CAUSE IRRITATION

Inhalation: N/A

Inhalation: N/A

Inhalation: N/A

Inhalation: N/A
         Indestion: MAY CAUSE STOMACH PAIN CRAMES WOMITING AND NAUSEA ...
Eye Contact: IMMEDIATELY EDUSH THE EYE WITH LARGE MUNNTITIES OF RUNNING WATER FOR A MINIMUM OF 15 MINUTES. HOLD THE EYELIDS APART DURING THE IRRIGATION TO ENSURE FLUSHING OF THE ENTIRE SURFACE OF THE EYE LID WITH WATER. GET MEDICAL ATTENTION IF IRRITATION PERSISTS.

Skin Contact: FLUSH THE EFFECTED AREA WITH LARGE QUANITIES OF RUNNING WATER WHILE REMOVING CONTAMINATED CLOTHES AND SHOES. WASH CLOTHING BEFORE REUSE. GET MEDICAL ATTENTION IF IRRITATION PERSISTS.
Inhalation: N/A
Ingestion: REQUIRES IMMEDIATE MEDICAL MANAGEMENT. DRINK MILK OR WATER AND
GET MEDICAL ADVICE. VOMITING SHOULD BE INDUCED ONLY RECOMMENDATION OF
MEDICAL PERSONNEL.
                                         SECTION_92 -SPECIAL_PROTECTION INFORMATION
                                                  Respiratory Protection: N/A
Ventilation: N/A
Protection Gloves: N/A
Eye Protection: N/A
SECTION 10. ADDITIONAL INFORMATION AND PRECAUTIONS. .....
Handling and Storage Precautions: STORE IN A COOL DRY PLACE.
SARA TITLE III H&P RATINGS:
                                                        Acute: YES
                                                                                        Chronic: NO
                                           Pressure Release: NO
                                                                                              Reactivity: NO
                Fire: NO
NEPA RAJINGS: _ HEALTH EL _ EIRE _ O _ REACTIVITY TO _ SRECIEIC TO _ _ _
SECTION 11 REGULATORY CLASSIFICATIONS
  NON-REGULATED
THE INFORMATION ON THIS MATERIAL SAFETY DATA SHEET REPRESENTS THE LATEST DATA AND BEST OPINION AS TO THE PROPER USE AND HANDLING OF THIS PRODUCT UNDER NORMAL CONDITIONS. ANY USE OF THIS PRODUCT OR METHOD OF APPLICATION WHICH IS NOT IN CONFORMANCE WITH THIS DATA SHEET AND THE PRODUCT LABEL DIRECTIONS, IS THE RESPONSIBILITY OF THE USER. THIS MATERIAL SAFETY DATA SHEET WAS PREPARED TO COMPLY WITH THE OSHA HAZARD COMMUNICATION REGULATION.
```

...anufacturer: Aremoo Products, Inc.

23 Snowden Ave.

Emergency Phone: 914 762 0685

Ossining, NY 10562

914 941 5177 914 941 6609

PYROMAX 9657B Putty Base IDENTITY:

10/04/90

#### SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Compounds	CAS #	ACGIH TLV	Weight %
Chromium	7440-47-3	0.5 mg/m3	<15
Iron	1309-37-1	5.0 mg/m3	<40
Nickel	7440-02-0	1.0 mg/m3	<10
Manganese	7439-96-5	5.0 mg/m3	くち
Molybdenum	7439-98-7	10.0 mg/m3	<5
Polyamide Resin	25068-38-6	N/D	<50

The above powders are suspended in an organic binder therefore no free dust exists.

Bisphenol A diglycidyl ether resin (epoxy resin) - OSHA PEL and ACGIH TLV ot established.

#### SECTION III - PHYSICAL DATA

Boiling Point: >500F Specific Gravity: paste

Vapor Density (AIR=1): N/D Melting Point: N/D

Vapor Pressure (mm Hg.): N/D Evaporation Rate: <1 (Butyl Acetate=1)

Solubility in Water: 0

Appearance and Odor: Dark gray paste.

#### SECTION IV - FIRE and EXPLOSION HAZARD DATA

Flash Point: 390F (closed cup) Flammable Limits: LEL: (N/D) UEL: (N/D)

Extinguishing Media: Carbon dioxide, foam, dry chemical, water spray.

Special Fire Fighting Procedures: Use self contained air supplied breathing apparatus.

Unusual Fire and Explosion Hazards: Decomposition and combustion products my be toxic.

#### SECTION V - REACTIVITY DATA

conditions to avoid: Strong acids or bases in bulk.

NAME OF TAXABLE PARTY.

Hazardous Polymerization ( ) May Occur

(X) Will Not Occur

#### SECTION VI - HEALTH HAZARD DATA

#### Effects of Overexposure

Primary routes of entry: inhalation, skin, ingestion.

Health hazards (acute and chronic): ANSI classification 4

Overexposure effects: irritation, sensitization, dermatitis.

#### Emergency and First-Aid Procedures

Eye: Immediately flush with water for at least 15 minutes.

Skin: Promptly wash thoroughly with water at least 15 minutes.

Inquestion: Not a likely hazard, call a physician.

\_\_halation: Remove to fresh air, give oxygen if breathing is difficult.

#### SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be taken in case material is released or spilled: Avoid personal contact. Recover uncontaminated material for use. Take up residue with absorbent. Put in closable container for disposal. Flush contaminated area with water.

Waste Disposal Method: Dispose of in accordance with local, state, and federal regulations.

Precautions to be taken in handling and storing: Do NGT leave containers open, causes irritation. May cause allergic skin reaction. Avoid contact; avoid breathing vapor, mist, spray; wash after handling. Use of impervious gloves, goggles, and an NICSH approved respirator is recommended.

#### SECTION IX SPECIAL PROTECTION INFORMATION

Good industrial hygiene practice requires that employee exposure be maintained below the recommended TLV. This is preferably achieved through the provision of adequate ventilation where necessary. Where dust cannot be controlled in this way, personal respiratory protection should be aployed.

DISCLAIMER OF LIABILITY: THE INFORMATION CONTAINED HERE IN IS BASED ON DATA TAKEN FROM SOURCES BELIEVED TO BE BOTH CURRENT AND RELIABLE AT THE TIME OF BLICATION. AREMOD PRODUCTS, INC MAKES NO WARRANTIES EXPRESSED OR IMPLIED, AS TO THE ACCURACY AND ASSUMES NO LIABILITY ARISING FROM ITS USE BY OTHERS. COMPLIANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS REMAINS THE RESPONSIBILITY OF THE USERS.

#### <u>SECTION I - PRODUCT IDENTIFICATION</u>

Manufacturer: Aremco Products, Inc.

23 Snowden Ave.

Ossining, NY 10562

Information Phone: 914 762 0685

Emergency Phone: 914 762 0685

914 941 5177 914 941 6609

IDENTITY: PYROMAX 9657A Putty Activator

10/04/90

#### SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Compounds	CAS #	ACGIH TLV	Weight %
Chromium	7440-47-3	0.5 mg/m3	<15
Iron	1309-37-1	5.0 mg/m3	<40
Nickel	7440-01-0	1.0 mg/m3	<10
Manganese	7439-96-5	5.0 mg/m3	<5
lybdenum	7439-98-7	10.0 mg/m3	<5
-olyamide Resin	250 <b>6</b> 8-38-6	N/D	`<50

\*Note: The above powders are suspended in an organic binder system, therefore no free dust exists.

#### SECTION III - PHYSICAL DATA

Boiling Point: N/D

Specific Gravity: paste

Vapor Density (air=1): N/D

Melting Point: N/D

Vapor Pressure (mm Hg.): N/D

Evaporation Rate: N/D

(Butyl Acetate=1)

Solubility in Water: O

Appearance and Odor: Dark gray paste.

#### SECTION IV - FIRE and EXPLOSION HATARD

lash Point: 509F (closed cup) Flammable Ligits: [35]

Extinguishing Media: Carbon dioxide, foam, dry chemical.

Special Fire Fighting Procedures: Use self contained air supplied breathing apparatus. Class B liquid.

Unusual Fire and Explosion Hazards: None known, handle as a combustible.

#### SECTION V - REACTIVITY DATA

Stability ( ) Unstable ( X ) Stable Conditions to avoid: Incompatible with strong oxidizing agents. Hazardous decomposition or byproducts: carbon dioxide and or carbon monoxide, nitrogen oxides.

Hazardous Polymerization ( ) May Occur ( X ) Will Not Occur

#### SECTION VI - HEALTH HAZARD DATA

. Effects of Overexposure

Primary routes of entry: inhalation, skin, ingestion.

\_\_ealth hazards (acute and chronic): ANSI classification 3

Overexposure effects: irritation, sensitization, dermatitis; allergies may be aggravated by exposure.

#### Emergency and First-Aid Procedures

Eye: Immediately flush with water for at least 15 minutes.

Skin: Wipe off excess. Rinse skin with 5% acetic acid, scrub with soap and water.

Ingestion: Not a likely hazard, call a physician.

Inhalation: Remove to fresh air, give oxygen if breathing is difficult.

#### <u>SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE</u>

Steps to be taken in case material is released or spilled: Avoid personal contact. Recover uncontaminated material for use. Scrub with 5% acetic acid. Rinse with very hot water. Flush contaminated area with water.

aste Disposal Method: Dispose of in accordance with local, state, and federal regulations.

Precautions to be taken in handling and storing: Do NOT leave containers open, causes irritation. May cause allergic skin reaction. Avoid contact; avoid breathing vapor, mist, spray; wash after handling. Use of impervious gloves, goggles, and an NIOSH approved respirator for organic vapors is recommended.

#### SECTION IX SPECIAL PROTECTION INFORMATION

Good industrial hygiene practice requires that employee exposure be maintained below the recommended TLV. This is preferably achieved through the provision of adequate ventilation where necessary. Where dust cannot be controlled in this way, personal respiratory protection should be employed.

DISCLAIMER OF LIABILITY: THE INFORMATION CONTAINED HERE IN IS BASED ON DATA TAKEN FROM SOURCES BELIEVED TO BE BOTH CURRENT AND RELIABLE AT THE TIME OF PUBLICATION. AREMCO PRODUCTS, INC MAKES NO WARRANTIES EXPRESSED OR IMPLIED, AS TO THE ACCURACY AND ASSUMES NO LIABILITY ARISING FROM ITS USE BY OTHERS. COMPLIANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS REMAINS THE RESPONSIBILITY OF THE USERS.

# Vorthwest inviroService, Inc. (206) 622-1090

## **WASTE PRODUCT QUESTIONNAIRE**

#### **PLEASE DO NOT SEPARATE FORMS**

Generator's copy will be mailed back after NWES review

**WPQ** 

12468

The second straining of the second se	124 (200) 022-1090		buok altoi iiii-		-		
perintor U.S. EPAID 1	5   2						
Northwest Envi		•	Billing Address				
lity Address 1700 Airport Wa	ay South						
Seattle, WA 9							
hnical Contact	,	Title	<u> All All Committee and an an an an an an an an an an an an an </u>		Phone		
Jerry Bartlett		Title			Phone		
Fred Gates	WASTE PROD	UCT DESCRIB	PTION & CHARACTE	ERISTICS	45.1		
te Product Name							
ess Generating Waste	ed oil on an	-					
Used oil rec Physical State At 70°F.	lamation on . Free Liquids at 70°F.	and off	Spec Flesh Po	oint		Layers	<del></del>
= = 1   -	ne100%	□< 70°F. □ 70°-99°F. □ 100°-139°F.	☐ > 200°F. ☐ No Flash	□ or	osed Cup oen Cup	☐ Multilayered ☐ Bi-Layered . X Homogenous	
pH	Solids		pecific Gravity	□ None	Odor	Color Brown	
	By Volume tal %	8 X Liquid		None	Strong	BLOWIL	
4.1 - 10 Exact Dis	ssolved%		_   i	Describe $\underline{P}$	<u>etroleum</u>	-	
		Solid	lbs./ft. <sup>3</sup>				
METALS  [X] Total (PPM) ☐ EPA	Extraction Procedure (mg/L)		VASTE PRODUCT C	CHEMICAL		Account For 100% of Inter (Specify):	photo :
	ercury (Hg) <u>&lt; • 2</u>		1	l Brook			0.0
i; la) <u>&lt;100</u> Nic	ckel (Ni) <u>&lt; 5</u>	~				oleum oil	
$\frac{1-10}{5-20}$ Se	lenium (Se) . <u>&lt; 1</u>	- 1 T	%			ns <100	
ornium (Cr) . $5-20$ Sil	ver (Ag) <u>&lt;1</u>	_ H₂\$O	4 %	BSW			<u>4-7_</u> %
40 150	nc (Zn) <u>&lt; 500</u> andetectable	- HNO3	, %	·			%
REACTIVES AND OTHE	R WASTES (PPM)		l %	·			%
	B's 1 <						%
	xChrome	_ Chlori	des %	·			%
	herLING INFORMATION				ZARDOUS PROPI		
per Shipping Name: (Used)			U.S. EPA Hazardous Co			ENTIES	<u> </u>
por orapping reams	<u> </u>		O.S. El A lineary	Julius	<u></u>		
Combostible	12	N3 1 0 0 7	Washington State Code	s			
THazard Class: Combustible		#: <u>NA1993</u>	State Designation	DW 🗀	EHW [		
on ☐ Yes ☑ No Inhalation Hazard ☐ Ye	es 🔀 No Dangerous When We	et ∐ Yes 🔀 No	is Waste Product:	Ignitable [	Corrosive	active None of Above	Other
			☐ Subject to Land	Disposal f	Restrictions (If mar	ked, fill out notification s	:heet)
F Shipping Container: Drum ☐ Voluer ☐ Type	<del>-</del>		0				
ected:	Gals/lbs per [] mo []		Special Handling Requ	urements:			
tional Labels Required:	1000						
				_			
I hereby certify that as an authorized repre- conducted in accordance with the approved hazardous components have been included in	sentative of the generator named at test methods in 40 CFR 261 on a	oove, all informatio	ple as defined in 40CRF26	the attached 1.20. To the	best of my knowledge,	all known (40CFR261) and sus	spected
ature ferm of	Cruy						<u></u>
/lewed By	Chemical Nature	NWES INC	Status	<u> </u>		<u>-                                    </u>	•
	0 0 0		Appro	oved/Permitted	Denied	Pending	:

# Northwest nviroService, Inc.

# **WASTE PRODUCT QUESTIONNAIRE**

## PLEASE DO NOT SEPARATE FORMS

Generator's copy will be mailed back after NWES review

**WPQ** 

12468

erator U.S. EPA			Sample Number	n	nailed i	back after N	WES	review		
710	15.18.13.16.1	7111512	2			Billing Address			<u> </u>	
N	orthwest	Enviros	Service, Ind	<u>.                                    </u>		Dining Address				
ity Address	700 Airne	ort Wav	South					i i		
	-									
S	eattle, v	VA 9813	34				7.			
-11011	<u> </u>			<u></u>			1111			
inical Contact .T.	erry Bart	lett			Title			Ph	one	
ness Contact	-				Title			Ph	one	
H'	red Cates		WASTE PRO	DUCT	DESCRIP	TION & CHARA	CTE	RISTICS		_
te Product Nar	ne .		MAGIE I NO	500.0	7 <u>230</u> 1111	101. 4 0.11.		101100		
ess Generating	Processe	d used	oil on a	nd o	ff sp	ec		<del></del>		
		reglar	nation on	and	off	spec				
_	_		nation on ree Liquids at 70°F.				sh Poli			Layers
Solid	Sludge		□ No	_	70°F.				·=	Multilayered
Liquid	Powder	_ volume _	<del>100</del> %		°-99°F. 0°-139°F.	☐ > 200		Open (	Sup	Bi-Layered
	pH		Solids			☐ No FI	2511	Exact —		- X Homogenous Color
] ≤ 2	10.1 - 12.4		· ·		<u>8</u>	•	_		or Strong 171	Brown
]>2-4	□ ≥ 12.5	1	%	✓ Liq	_	lbs./gal.	_	Mild		
4.1 - 10	Exact	1	/ed%	X				escribe Pet	roleum	
_ N	/A -	Susper	nded %	☐ So	lid	lbs./ft. <sup>3</sup>	\   			
		METALS			V	VASTE PRODUC	CT CF	IEMICAL CO	MPOSITION (	Account For 100% of Totall
√ <b>∑</b> Tot	al (PPM)	EPA Extra	action Procedure (mg/l	L)				1	Ott	ner (Specify):
anic (As)	··· <u>-&lt;5</u>	Mercur	y (Hg) <u> </u>			11	•	Droce	ee natro	oleum oil 99 %
3a) .	4100	Nickel (	(Ni) <u>45</u>	[	_					·
іржечці (Cd)	1-10	Seleniu	ım (Se) <u>&lt; 1</u>		HCI_		_ %	1	_	ns<1000ppm %
	) <u>5-20</u>	,	(Ag) <u>&lt;1</u>		H₂SO,	4	_ %	BSW	-w	
	45	,	(n) <u>&lt; 500</u>		HNO <sub>a</sub>		_ %			%
d (Pb)	10-150		tectable		NaOH		%			
		AND OTHER WA		1		ols				7
	• • • • • • • • • • • • • • • • • • • •		1	<del>-</del> ]		_		-	, <u>v</u> -	76
			rome	_	Chioric	des	_ %	<u> </u>		<del></del> %
des										
			INFORMATION						IDOUS PROPI	ERTIES
ær Shippir	ng Name: — <del>( U</del> s	sed) oi.	l n.o.s.			U.S. EPA Hazardo	us Cod	les <u>N/</u>	<u> </u>	
			**-							
HazardC	lees:Combine	tible 1	iania ID	#- NI R	1002	Washington State	Codes			
Пагаго	ia\$5.Ç <del>Q   QQ</del> -	( <del>1018 1.</del>	iquidI.D.	#- I <del>N/A</del>	1993	State Designati	on	DW 🗌 EH	w [T]	
n □ Yes	No Inhalation Ha	zard ☐ Yes 🔀	No Dangerous When V	Vet ☐ Ye	es [ <mark>X</mark> ]No	Is Waste Produc		<del></del>		active None of Above Other
			- <del></del>					_	_	ked, fill out notification sheet)
Shipping	Container: Drun	n 🔲 Volume	Bulk 🗌 Vol	lume			and L	ziaposai i iest	nouona (ii mai	red, ill out notification sheet)
н 🗌 Турс	<b>9</b>	·	Volume			Special Handling	Require	ements:		
ected:	·- <u>-</u>		Gals/lbs per 🔲 mo 🏻 [	∏ ÿr:						
ional Labels	Required:		· · · · · · · · · · · · · · · · · · ·							
			· · · · · · · · · · · · · · · · · · ·							
conducted	certify that as an auth in accordance with the components have bee	e approved test n	ive of the generator named nethods in 40 CFR 261 on a	above, all	information	FICATION STATEM submitted in this are ple as defined in 400	nd all th	he attached docu 20. To the best	iments is true and of my knowledge,	accurate. Analysis of the waste was all known (40CFR251) and suspected
ature	(	Bair	1117			Title	1.4	)	الميدا	
aure	Then	~~~							¥	Date 70 1
inus d D	<u></u>		Cheminal Natura		<i>IWES INC.</i> Reviewed	. USE ONLY Status			· · · · · · · · · · · · · · · · · · ·	
iewed By	p <sup>r</sup>		Chemical Nature	Date	-EVICWOO	٠	Approve	ed/Permitted	Denied	Pending
	- <u>;</u>									
đ.	<i>:</i>		4							•



Section 1 - Product Identification					
Manufacturer's Name Various  Issue Date November 1, 1990					
Product Name / Trade Name  Brass Alloys  Common Name / Grade  Half Hard, Free Cutting, Leaded Naval, Naval					
Half Hard, Free Cutting, Leaded Naval, Naval					

#### Section 2 - Typical Chemical Composition (1)

		<u>Permissible</u>	Air Level (3)
CAS No.	Wt. %	OSHA PEL	ACGIH TLV
7440-50-8	55-90	1.0	1.0
			n en
7440-66-6	45.0	5.0	5.0 (Resp)
7439-92-1	3.7	0.05(4)	0.15(4)
7440-31-5	1.0	2.0 (5)	2.0(6)
	7440-50-8 7440-66-6 7439-92-1	7440-50-8 55-90 7440-66-6 45.0 7439-92-1 3.7	CAS No.         Wt. %         OSHA PEL           7440-50-8         55-90         1.0           7440-66-6         45.0         5.0           7439-92-1         3.7         0.05(4)

REMARKS: basis for TLV: Cu - irritant properties

ZnO Dust - nuisance dust

ZnO Fume - prevention of metal fume fever

Pb - blood, CNS effects

Section 3 - Physical Data					
Material is (At Normal Conditions) Solid	Appearance And Odor Reddish-Brown Metal / No Odor				
relating Point (Base Metal) 1590-1900°F	Specific Gravity $(H_20 = 1) 7.7 - 8.9$				

## Section 4 - Fire - Explosion

Brass products in the solid state present no fire or explosion hazard.

Dust hazard exists under favoring conditions of small practice size. Dispersion in air and strong ignition source may result in an explosion.

## Section 5 - Reactivity Data

Stable under normal conditions of use, storage and transportation.

Incompatible with mercury, ammonia, acetylene. Avoid exposure during storage to strong acids, bases or oxidizing agents. Toxic gases, aerosols and vapors may release in a fire involving copper alloys if fume of other compounds or other contracting materials are involved.

#### Section 6 - Health Hazard Information (See Section 2 for exposure limits.)

#### Health Effects / Signs and Symptoms:

#### Copper (Cu)

Inhalation of Cu fumes may cause irritation of the eyes, nose and throat and a flu-like illness called metal fume fever. Signs and symptoms of metal fume fever include fever, muscle aches, nausea, chills, dry throat, cough and weakness. Cu fumes may also produce a metallic or sweet taste. Repeated of prolonged exposure to Cu fumes may cause discoloration of the skin and hair.

#### Zinc (Zn)

Subjecting zinc or alloys containing zinc to high tempertures (such as occurs during welding) will cause the formation of zinc oxide. Exposure to zinc oxide fumes or dusts can result in a flu-like illness called metal fume fever. Early symptoms may include a sweet or metallic taste in the mouth, dryness and irritation of the throat, and coughing. These symptoms may progress to shortness of breath, headache, fever, chills, muscle aches, nausea, vomiting, weakness, fatigue and profuse sweating. The attack may last 6-48 hours and is more likely to occur after a period away from the job.

## Section 6 - Health Hazard Information (Continued)

#### Lead (Pb)

Chronic or acute inhalation exposures to fumes or dusts of inorganic lead compounds (such as lead oxide) can adversely affect several organ systems including the nervous system, the gastrointestinal system, the hematological system, and the renal system. The early affects are characterized by fatigue, constipation, muscle aches, abdominal pains, and decreased appetite. Later signs and symptoms can include anemia, pallor, a "lead line" on the gums, and reduced hand-grip strength. Lead colic produces intense abdominal cramping which can be accompanied by constipation, nausea, and vomiting. A condition called "wrist drop" can develop if the peripheral nervous system is affected. Severe central nervous system effects (referred to as lead encephalopathy) usually only occur after heavy and rapid lead exposures. Signs and symptoms may include headache, dizziness, convulsions, delirium, coma and possibly death. Long-term lead exposures can also produce kidney damage with possible decreased renal function leading to such conditions as uremia.

#### Tin (Sn)

The toxicity of inorganic tin compounds is generally low. Exposure to dust or fumes of tin oxide can result in a benign pneumoconiosis called stannosis. No tissue reaction or pulmonary dysfunction has been associated with this lung condition.

Usual Route(s) of Entry: Inhalation

Medical Conditions Possibly Aggravated: Chronic disease or disorders of the respiratory system. Carcinogen Information: NTP and IARC consider nickel and certain nickel compounds to be probable human carcinogens.

### Section 7 - Special Protection Information

NIOSH/MSHA - Approved dust and fume, respirator should be used to avoid excessive inhalation of particulates when exposure exceeds TLV's.

Adequate ventilation should be utilized when welding, burning, sawing, brazing, grinding or machining when exposure exceeds TLV's.

Safety glasses or goggles should be utilized as required by exposure. Other protective equipment should be utilized as required by the welding standards.

## Section 8 - Environmental

#### Waste Disposal Method

Used or unused product should be tested to determine hazard status and disposal requirements under federal, state or local laws and regulations.

#### **Disclaimer**

The information in the MSDS was obtained from sources which we believe are reliable. However, the information is provided without any representation or warranty, express or implied regarding the accuracy or correctness.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.

This document has been prepared solely for the intent of compliance with the provisions of Subpart 2 of Part 1910 of Title 29 of the Code of Federal Regulation, paragraph 1910.1200.

#### Footnotes:

- (1) Concentrations may vary somewhat between batches or lots. When possible, a concentration range is indicated. Occasionally, however, levels may even fall outside of the usual concentration ranges.
- (2) Common names, if applicable, appear in parentheses following the chemical names.
- (3) All values, unless otherwise specified, refer to 8-hour time-weighted average concentrations and units are in mg/M3
- (4) As inorganic lead compounds, dusts and fumes.
- (5) As inorganic tin compounds, except oxides.
- (6) As tin oxide and inorganic compounds.



Section 1 - Pi	roduct Identification
Manufacturer's Name Various	November 1, 1990
Product Name / Trade Name  Bronze Alloys	Common Name / Grade Bearing

## Section 2 - Typical Chemical Composition (1)

			Permissible Air Level (3)		
Ingredient (2)	CAS No.	Wt. %	OSHA PEL	ACGIH TLV	
Copper	7440-50-8	55-99.9	0.10(4)	0.20(4)	
Zinc	7440-66-6	.01-42	5.00(5)	5.00(5)	
Lead	7439-92-1	.01-25	0.05(6)	0.15(6)	
Tin	7440-31-5	.01-17	2.00(7)	2.00(8)	
Aluminum	7429-90-5	.01-12	NA	5.00(9)	
Iron	7439-89-6	.01-5.0	10.00(10)	5.00(10)	
Manganese	7439-96-5	.01-5.0	5.00(11)	1.00(12)	
Nickel	7440-02-0	.01-2.5	1.00(13)	1.00(13)	
Trace Elements	NA	LT 1.0	NA	NA `	

Section 3 - Physical Data				
Material Is (At Normal Conditions)	Appearance And Odor			
Solid [Melting Point (Base Metal)	Yellow-Brown Metal; Odorless  Specific Gravity			
1800 - 1840°F	$(H_20 = 1) 7.6 - 7.8$			

## Section 4 - Fire - Explosion

Product in the solid state present no fire or explosive hazards.

Dust hazard exists under favoring conditions of small practice size. Dispersion in air and strong ignition source may result in an explosion.

# Section 5 - Reactivity Data

Stable under normal conditions of use, storage and transportation.

Incompatible with mercury, ammonia, acetylene. Avoid exposure during storage to strong acids, bases or oxidizing agents. Toxic gases, aerosols and vapors may release in a fire involving copper alloys if fume of other compounds or other contracting materials are involved.

# Section 6 - Health Hazard Information (See Section 2 for exposure limits.)

## Health Effects / Signs and Symptoms:

NOTE: Steel products in their usual physical form do not pose any health hazards. However, when subjected to welding, burning, grinding, cutting, abrasive blasting, heat treatment, pickling, or similar operations, potentially hazardous fumes or dusts may be emitted. Despite the fact that the welding, burning, etc. of steel in this category may produce fumes containing nickel, the air concentrations, generated of these components are expected to be extremely low. Particular attention should be directed to the other constituents which may be present at substantial levels. The following is a list of fumes or dusts that may be generated from this product category and the health effects associated with overexposure to them:

# Copper (Cu)

Inhalation of Cu fumes may cause irritation of the eyes, nose and throat and a flu-like illness called metal fume fever. Signs and symptoms of metal fume fever include fever, muscle aches, nausea, chills, dry throat, cough and weakness. Cu fumes may also produce a metallic or sweet taste.

## Section 6 - Health Hazard Information (Continued)

## Zinc (Zn)

Subjecting zinc or alloys containing zinc to high tempertures (such as occurs during welding) will cause the formation of zinc oxide. Exposure to zinc oxide fumes or dusts can result in a flu-like illness called metal fume fever. Early symptoms may include a sweet or metallic taste in the mouth, dryness and irritation of the throat, and coughing. These symptoms may progress to shortness of breath, headache, fever, chills, muscle aches, nausea, vomiting, weakness, fatigue and profuse sweating. The attack may last 6-48 hours and is more likely to occur after a period away from the job.

#### Lead (Pb)

Chronic or acute inhalation exposures to fumes or dusts of inorganic lead compounds (such as lead oxide) can adversely affect several organ systems including the nervous system, the gastrointestinal system, the hematological system, and the renal system. The early affects are characterized by fatigue, constipation, muscle aches, abdominal pains, and decreased appetite. Later signs and symptoms can include anemia, pallor, a "lead line" on the gums, and reduced hand-grip strength. Lead colic produces intense abdominal cramping which can be accompanied by constipation, nausea, and vomiting. A condition called "wrist drop" can develop if the peripheral nervous system is affected. Severe central nervous system effects (referred to as lead encephalopathy) usually only occur after heavy and rapid lead exposures. Signs and symptoms may include headache, dizziness, convulsions, delirium, coma and possibly death. Long-term lead exposures can also produce kidney damage with possible decreased renal function leading to such conditions as uremia.

#### Tin (Sn)

The toxicity of inorganic tin compounds is generally low. Exposure to dust or fumes of tin oxide can result in a benign pneumoconiosis called stannosis.

## Aluminum (Al)

Particles of aluminum deposited in the eye may cause irreversible tissue damage of the cornea. Al salts may cause dermatitis, eczema, conjunctivitis and irritation of the mucous membranes of the upper respiratory tract. Long-term inhalation exposure to Al dust or fumes has been associated with fibrotic lung condition known as Shaver's disease.

#### Iron (Fe)

Subjecting iron and alloys containing iron to high temperatures (such as occurs during welding) will cause the formation of iron oxide. Long-term exposure to iron oxide or dusts has been associated with a benign lung condition known as siderosis.

#### Manganese (Mn)

Mn intoxication is usually due to the oxide or salts of Mn, elemental Mn exhibits very low toxicity. The dust and fumes can act as minor irritants to the eyes and respiratory tract. Both acute and chronic exposures may adversely affect the central nervous system (CNS), but symptoms are more likely to occur after at least 1 or 2 years of prolonged or repeated exposures.

#### Nickel (Ni)

Ni fumes and dusts are respiratory irritants and may cause a severe pneumonitis. Skin contact with nickel and its compounds may cause allergic dermatitis. The resulting skin rash is often referred to as "nickel itch." Ni and it compounds may also produce eye irritation, particularly on the inner surfaces of the eyelids (i.e. the conjunctiva).

## Usual Route(s) of Entry: Inhalation

Medical Conditions Possibly Aggravated: Chronic disease or disorders of the respiratory system.

Carcinogen Information: NTP and IARC consider nickel and certain nickel compounds to be probable human carcinogens.

# **Section 7 - Special Protection Information**

NIOSH/MSHA - Approved dust and fume, respirator should be used to avoid excessive inhalation of particulates when exposure exceeds TLV's.

Adequate ventilation should be utilized when welding, burning, sawing, brazing, grinding or machining when exposure exceeds TLV's.

Safety glasses or goggles should be utilized as required by exposure. Other protective equipment should be utilized as required by the welding standards.

#### Section 8 - Environmental

#### Waste Disposal Method

Used or unused product should be tested to determine hazard status and disposal requirements under federal, state or local laws and regulations.

#### Disclaimer

The information in the MSDS was obtained from sources which we believe are reliable. However, the information is provided without any representation or warranty, express or implied regarding the accuracy or correctness.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.

This document has been prepared solely for the intent of compliance with the provisions of Subpart 2 of Part 1910 of Title 29 of the Code of Federal Regulation, paragraph 1910.1200.

#### Footnotes:

- (1) Concentrations may vary somewhat between batches or lots. When possible, a concentration range is indicated. Occasionally, however, levels may even fall outside of the usual concentration ranges.
- (2) Common names, if applicable, appear in parentheses following the chemical names.
- (3) All values, unless otherwise specified, refer to 8-hour time-weighted average concentrations and units are in mg/M3.
- (4) As copper fume.
- (5) As zinc oxide fume.
- (6) As inorganic lead compounds, dusts and fumes.
- (7) As inorganic tin compounds, except oxides.
- (8) As tin oxide and inorganic compounds.
- (9) As aluminum welding fumes.
- (10) As iron oxide fume.
- (11) As manganese fume.
- (12) Ceiling value for manganese.
- (13) As nickel metal and insoluble compounds.



	Section 1 - Pr	oduct Identi	fication		
Manufacturer's Name Various	Issue Date	November 1, 1	990		
Product Name / Trade Name Copper Allo	Common Name / Grade Bar, Sheet, Plate				
Se	ction 2 - Typical (	Chemical Co	omposition (1)		
			Permissible	Air Level (3)	
Ingredient (2)	CAS No.	Wt. %	OSHA PEL	ACGIH TLV	
Copper	7440-50-8	100.0	,	· - <del></del>	
Fume			0.1	0.2	
Dust and Mists (as CU)		.•	1.0	1.0	
	Section 3	- Physical [	Data		
Material Is (At Normal Conditions) Solid		Appearance And Odor Reddish-Brown Metal / No Odor			
elting Point (Base Metal) 1924-1981°F	1	Specific G	ravity $(H_20 = 1) 8.94$		

## Section 4 - Fire - Explosion

Product in the solid state present no fire or explosive hazards.

Dust hazard exists under favoring conditions of small practice size. Dispersion in air and strong ignition source may result in an explosion.

#### **Section 5 - Reactivity Data**

Stable under normal conditions of use, storage and transportation.

Incompatible with mercury, ammonia, acetylene, acids. Avoid exposure during storage to strong acids, bases or oxidizing agents. Toxic gases, aerosols and vapors may release in a fire involving copper alloys if fume of other compounds or other contract materials are involved.

#### Section 6 - Health Hazard Information (See Section 2 for exposure limits.)

Short term exposure to fumes/dust may produce irritation of eyes and respiratory systems. Inhalation of high concentrations of fresh formed oxide fumes of copper and lead may cause metal fume fever characterized by a metallic taste in the mouth and irritation of the throat and influenza-like symptoms.

Medical Conditions Possibly Aggravated: Chronic diseases or disorders of the respiratory system. Carcinogen Information: NTP and IARC consider arsenic and certain compounds to be known human carcinogens.

### Section 7 - Special Protection Information

NIOSH/MSHA - Approved dust and fume, respirator should be used to avoid excessive inhalation of urticulates when exposure exceeds TLV's.

Adequate ventilation should be utilized when welding, burning, sawing, brazing, grinding or machining when exposure exceeds TLV's.

Safety glasses or goggles should be utilized as required by exposure. Other protective equipment should be utilized as required by the welding standards.

#### Section 8 - Environmental

#### Waste Disposal Method

Used or unused product should be tested to determine hazard status and disposal requirements under federal, state or local laws and regulations.

#### **Disclaimer**

The information in the MSDS was obtained from sources which we believe are reliable. However, the information is provided without any representation or warranty, express or implied regarding the accuracy or correctness.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.

This document has been prepared solely for the intent of compliance with the provisions of Subpart 2 of Part 1910 of Title 29 of the Code of Federal Regulation, paragraph 1910.1200.

#### Footnotes:

- (1) Concentrations may vary somewhat between batches or lots. When possible, a concentration range is indicated. Occasionally, however, levels may even fall outside of the usual concentration ranges.
- (2) Common names, if applicable, appear in parentheses following the chemical names.
- (3) All values, unless otherwise specified, refer to 8-hour time-weighted average concentrations and units are in mg/M³.

# Material M.S.D.S. Enclosed

## North American Refractories

Super Pyramid AS

Narphos 85 P

Litecrete 50

Refracrete ES

Refracrete ESC

Diablo D

Super Tenex

## A.P. Green

Super G

Super H

Super Hybond

Castable Insulation No.22

Green Pak 85 P

Green Pak 83 MP

Greenkleen 60

Grefcon 60

KS 4V

MC 22

Lo Abrade

Sairset

G-23-26-28 IFB's

2300 degree H.D. Board

2600 degree H.D. Board

6# Blanket

8# Blanket

Inswool Paper

Insblock 19

## Harbison Walker

Versaflow 45

Versaflow 60

Versaflow 65

H.W. Cast #22

61-65 Brick

ES Castable C

#### VERSAFLOW 65/AL ADTECH

#### SECTION 6

#### EMERGENCY AND FIRST AID PROCEDURES

Irritants: Wash from skin or flush from eyes using large amounts of water.

#### SECTION 7

#### REACTIVITY DATA

PRODUCT STABILITY..... Stable

Store in dry location prior to use CHEMICAL INCOMPATIBILITY.....

HAZARDOUS DECOMPOSITION PRODUCTS N/A

HAZARDOUS POLYMERIZATION..... Will not occur

MATERIAL TO AVOID..... None

#### SECTION 8

#### SPILL AND LEAK PROCEDURES

Most refractory products may be landfilled. However, since your application of this product may change its chemical characteristics, and since disposal procedures may vary with locals and are subject to change, you should consult the governmental authority having jurisdiction for disposal information.

#### SECTION 9

#### SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION..... Where air contaminants can exceed

acceptable criteria, use approved respiratory protection equipment

appropriate to form and concentration of

air contaminants.

VENTILATION..... Local exhaust ventilation should be

provided if routine operation generates

dust in excess of allowable limits.

PROTECTIVE GLOVES..... Impermeable

EYE PROTECTION..... Approved safety glasses, goggles, or

faceshields should be used.

FOOT PROTECTION..... Metatarsal safety shoes

OTHER PRECAUTIONS..... None

#### SECTION 10

#### SPECIAL PRECAUTIONS

This product contains crystalline silica - a substance categorized in Group 2A by IARC (The International Agency for Research on Cancer) in 1987. They reported sufficient evidence of the carcinogenicity of crystalline silica to experimental animals, but limited evidence of the carcinogenicity of crystalline silica to humans. The National Toxicology Program (NTP) reported in 1991 that "silica, crystalline (respirable)" may reasonably be anticipated to be a carcinogen.

#### SECTION 11

#### SUPPLIER INFORMATION

This MSDS is based on OSHA FORM 174 but modified to more adequately suit refractory products. All data are subject to reasonable variation. This information is supplied in good faith by Marbison-Walker and is applicable to the product as shipped. Your application of the product may change its characteristics. THE DATA PROVIDED HEREIN ARE BELIEVED CORRECT OR ARE OBTAINED FROM SOURCES BELIEVED TO BE GENERALLY RELIABLE. HARBISON-WALKER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF THIS PRODUCT, AND HARBISON-WALKER ASSUMES NO OBLIGATION OR LIABILITY FOR RELIANCE OF THE INFORMATION CONTAINED IN THIS MSDS. This data is not part of any contract or condition of sale. It is solely supplied as an accommodation to the buyer.

#### SECTION 12

#### COMMENTS

SPECIAL NOTE: This product contains a proprietary organic fiber to promote safe heat up of the refractory. This fiber is noticeable to workers during

Page 2

\*\* MATERIAL SAFETY DATA SHEET \*\*

HARBISON-WALKER REFRACTORIES COMPANY 600 GRANT STREET PITTSBURGH, PA 15219

CHEMTREC 24 Hour Emergency

Assistance Phone No.: 1-800-424-9300

Latest Revision Date...07/17/96

Print Date......02/11/97

Prepared By: S. W. Thrower (412-562-6437)

VERSAFLOW 65/AL ADTECH

## SECTION 1 PRODUCT IDENTIFICATION

PRODUCT TRADENAME...... VERSAFLOW 65/AL ADTECH TYPE OF REFRACTORY...... High Alumina Castable

H-W BRAND CODE..... 536151

HMIS RATING..... Health:

Health: 2 0 = Minimal Flammability: 0 1 = Slight Reactivity: 0 2 = Moderate

2 = Moderate 3 = Serious 4 = Severe

## SECTION 2 HAZARDOUS INGREDIENTS / HAZARD DATA

CAS NUMBER	% WEIGHT	OSHA TWA	ACGIH TLV	SEC.313
14808-60-7	0-1	0.1 mg/cubic meter	0.1 mg/cubic meter	No
14464-46-1	1-2	0.05 mg/cubic meter	0.05 mg/cubic meter	No
1344-28-1	62-64	15 mg/cubic meter	10 mg/cubic meter	No
1305-78-8	1-2	5.0 mg/cubic meter	2.0 mg/cubic meter	No
69012-64-2	6-8	6.0 mg/cubic meter	2.0 mg/cubic meter	No
7789-75-5	1-3	2.5 mg/cubic meter	2.5 mg/cubic meter	No
	14808-60-7 14464-46-1 1344-28-1 1305-78-8 69012-64-2	14808-60-7 0-1 14464-46-1 1-2 1344-28-1 62-64 1305-78-8 1-2 69012-64-2 6-8	14808-60-7 0-1 0.1 mg/cubic meter 14464-46-1 1-2 0.05 mg/cubic meter 1344-28-1 62-64 15 mg/cubic meter 1305-78-8 1-2 5.0 mg/cubic meter 69012-64-2 6-8 6.0 mg/cubic meter	14808-60-7     0-1     0.1 mg/cubic meter     0.1 mg/cubic meter       14464-46-1     1-2     0.05 mg/cubic meter     0.05 mg/cubic meter       1344-28-1     62-64     15 mg/cubic meter     10 mg/cubic meter       1305-78-8     1-2     5.0 mg/cubic meter     2.0 mg/cubic meter       69012-64-2     6-8     6.0 mg/cubic meter     2.0 mg/cubic meter

#### SECTION 3 PHYSICAL DATA

pH..... Not determined

SPECIFIC GRAVITY OR BULK DENSITY 2.30

SOLUBILITY IN WATER..... Slight - contains calcium aluminate cement

APPEARANCE..... Gray color
ODOR..... Earthy odor
FORM..... Granular

#### SECTION 4 FIRE AND EXPLOSION HAZARD DATA

Unless otherwise noted, no fire hazard. Product is a refractory and will not burn.

## SECTION 5 EFFECTS OF OVEREXPOSURE \* ROUTE OF ENTRY

INGREDIENT	EFFECTS OF OVEREXPOSURE	SKIN	EYES	INHALATION
Line	Irritant to skin, eyes, mucous membranes	Yes	Yes	Yes
Alumina	Irritant to skin, eyes, mucous membranes	Yes	Yes	Yes
Fluorspar	Irritant to skin, eyes, mucous membranes	Yes	Yes	Yes
Silica Fume	Delayed lung fibrosis - silicosis	No	No	Yes
Silica Fume	Irritant to skin, eyes, mucous membranes	Yes	Yes	Yes
Crystalline Silica	Delayed lung fibrosis-silicosis	No	No	Yes
Crystalline Silica	Irritant to skin, eyes, mucous membranes	Yes	Yes	Yes

Page 1

#### VERSAFLOW 65/AL ADTECH

SECTION 12

#### COMMENTS

CONTID

installation. This fiber is non-toxic and should be treated as nuisance dust.

\*\* MATERIAL SAFETY DATA SHEET \*\* 

HARBISON-WALKER REFRACTORIES COMPANY 600 GRANT STREET

CHEMTREC 24 Hour Emergency

Assistance Phone No.: 1-800-424-9300

PITTSBURGH, PA 15219

Latest Revision Date...05/14/96

VERSAFLOW 60 ADTECH

Print Date.....02/11/97

Prepared By: S. W. Thrower (412-562-6437) 

SECTION	1	PRODUCT	IDENTIFICATION

PRODUCT TRADENAME..... VERSAFLOW 60 ADTECH High Alumina Castable TYPE OF REFRACTORY.....

H-W BRAND CODE..... 536144

HMIS RATING..... Health:

Health: 2
Flammability: 0
Reactivity: 0 0 = Minimal
1 = Slight
2 = Moderate

3 = Serious 4 = Severe

#### SECTION 2 HAZARDOUS INGREDIENTS / HAZARD DATA

CHEMICAL NAME (CHEMICAL FORMULA)	CAS NUMBER	% WEIGHT	OSHA THA	ACGIH TLV	SEC.313
Quartz (\$i02)	14808-60-7	0-3	0.1 mg/cubic meter	0.1 mg/cubic meter	No
Cristobelite (SiO2)	14464-46-1	1-4	0.05 mg/cubic meter	0.05 mg/cubic meter	No
Alumina (Non-Fibrous) (AL203)	1344-28-1	58-60	15 mg/cubic meter	10 mg/cubic meter	No
Lime (CaO)	1305-78-8	1-2	5.0 mg/cubic meter	2.0 mg/cubic meter	No
Silica Fume (SiO2)	69012-64-2	6-8	6.0 mg/cubic meter	2.0 mg/cubic meter	No

#### SECTION 3 PHYSICAL DATA

pH..... Not determined

SPECIFIC GRAVITY OR BULK DENSITY 2.20

SOLUBILITY IN WATER..... Slight - contains calcium aluminate cement

\_\_\_\_\_\_

APPEARANCE..... Gray color ODOR..... Earthy odor FORM..... Granular

#### FIRE AND EXPLOSION HAZARD DATA SECTION 4

Unless otherwise noted, no fire hazard. Product is a refractory and will not burn.

#### SECTION 5 EFFECTS OF OVEREXPOSURE \* ROUTE OF ENTRY

INGREDIENT	EFFECTS OF OVEREXPOSURE	SKIN	EYES	INHALATION
Lime	Irritant to skin, eyes, mucous membranes	Yes	Yes	Yes
Alumina	Irritant to skin, eyes, mucous membranes	Yes	Yes	Yes
Crystalline Silica	Delayed lung fibrosis-silicosis	No	No	Yes
Crystalline Silica	Irritant to skin, eyes, mucous membranes	Yes	Yes	Yes
Silica Fume	Delayed lung fibrosis-silicosis	No	No	Yes
Silica Fume	Irritant to skin, eyes, mucous membranes	Yes	Yes	Yes

Page 1

#### VERSAFLOW 60 ADTECH

#### EMERGENCY AND FIRST AID PROCEDURES SECTION 6

Irritants: Wash from skin or flush from eyes using large amounts of water.

#### SECTION 7

#### REACTIVITY DATA

PRODUCT STABILITY..... Stable

Store in dry location prior to use CHEMICAL INCOMPATIBILITY.....

HAZARDOUS DECOMPOSITION PRODUCTS N/A

HAZARDOUS POLYMERIZATION..... Will not occur

MATERIAL TO AVOID.....

\_\_\_\_\_\_\_\_\_\_

#### SECTION 8

#### SPILL AND LEAK PROCEDURES

Most refractory products may be landfilled. However, since your application of this product may change its chemical characteristics, and since disposal procedures may vary with locate and are subject to change, you should consult the governmental authority having jurisdiction for disposal information.

#### SECTION 9

#### SPECIAL PROTECTION INFORMATION

Where air contaminants can exceed RESPIRATORY PROTECTION.....

> acceptable criteria, use approved respiratory protection equipment

appropriate to form and concentration of

air contaminants.

VENTILATION..... Local exhaust ventilation should be

provided if routine operation generates

\_\_\_\_\_

dust in excess of allowable limits.

PROTECTIVE GLOVES..... Impermeable

EYE PROTECTION..... Approved safety glasses, goggles, or

faceshields should be used.

FOOT PROTECTION..... Metatarsal safety shoes

OTHER PRECAUTIONS.....

#### SPECIAL PRECAUTIONS

This product contains crystelline silica - a substance categorized in Group 2A by IARC (The International Agency for Research on Cancer) in 1987. They reported sufficient evidence of the carcinogenicity of crystalline silica to experimental animals, but limited evidence of the carcinogenicity of crystalline silica to humans. The National Toxicology Program (NTP) reported in 1991 that "silica, crystalline (respirable)" may reasonably be anticipated to be a carcinogen.

#### SECTION 11

#### SUPPLIER INFORMATION

This MSDS is based on OSHA FORM 174 but modified to more adequately suit refractory products. All data are subject to reasonable variation. This information is supplied in good faith by Herbison-Walker and is applicable to the product as shipped. Your application of the product may change its characteristics. THE DATA PROVIDED HEREIN ARE BELIEVED CORRECT OR ARE OBTAINED FROM SOURCES BELIEVED TO BE GENERALLY RELIABLE. HARBISON-WALKER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF THIS PRODUCT, AND HARBISON-WALKER ASSUMES NO OBLIGATION OR LIABILITY FOR RELIANCE OF THE INFORMATION CONTAINED IN THIS MSDS. This data is not part of any contract or condition of sale. It is solely supplied as an accommodation to the buyer.

#### SECTION 12

#### COMMENTS

SPECIAL NOTE: This product contains a proprietary organic fiber to promote safe heat up of the refractory. This fiber is noticeable to workers during

Page 2

## VERSAFLOW 60 ADTECH

SECTION 12

COMMENTS

CONTID

installation. This fiber is non-toxic and should be treated as nuisance dust.

\*\* MATERIAL SAFETY DATA SHEET \*\*

CHEMTREC 24 Hour Emergency

Assistance Phone No.: 1-800-424-9300

HARBISON-WALKER REFRACTORIES COMPANY 600 GRANT STREET

PITTSBURGH, PA 15219

Latest Revision Date...07/15/96

Print Date.....02/11/97

Prepared By: S. W. Thrower (412-562-6437)

VERSAFLOW 45 ADTECH

#### PRODUCT IDENTIFICATION

PRODUCT TRADENAME..... VERSAFLOW 45 ADTECH TYPE OF REFRACTORY..... Fireclay Castable H-W BRAND CODE..... 578492

0 = Minimal
1 = Slight 2 HMIS RATING..... Health:

Flammability: 0
Reactivity: 0 2 = Moderate 3 = Serious

4 = Severe

#### HAZARDOUS INGREDIENTS / HAZARD DATA SECTION 2

CHEMICAL NAME (CHEMICAL FORMULA)	CAS NUMBER	% WEIGHT	OSHA TWA	ACGIH TLV	SEC.313
Cristobalite (SiOZ)	14464-46-1	5-10	0.05 mg/cubic meter	0.05 mg/cubic meter	No
Alumina (Non-Fibrous) (Al203)	1344-28-1	42-44	15 mg/cubic meter	10 mg/cubic meter	No
Lime (CaO)	1305-78-8	1-2	5.0 mg/cubic meter	2.0 mg/cubic meter	No
Silica Fume (\$i02)	69012-64-2	6-8	6.0 mg/cubic meter	2.0 mg/cubic meter	No

#### SECTION 3 PHYSICAL DATA

pH..... Not determined

SPECIFIC GRAVITY OR BULK DENSITY 2.10

SOLUBILITY IN WATER...... Slight - contains calcium aluminate cement

APPEARANCE..... Light tan to gray color

ODOR..... Earthy odor FORM..... Granular 

PRESENTATION OF THE PROPERTY O

#### SECTION 4 FIRE AND EXPLOSION HAZARD DATA

Unless otherwise noted, no fire hazard. Product is a refractory and will not burn.

#### SECTION 5 EFFECTS OF OVEREXPOSURE \* ROUTE OF ENTRY

INGREDIENT	EFFECTS OF OVEREXPOSURE	SKIN	EYES	INHALATION
Lime	Irritant to skin, eyes, mucous membranes	Yes	Yes	Yes
Alumina	Irritant to skin, eyes, mucous membranes	Yes	Yes	Yes
Silica Fume	Irritant to skin, eyes, mucous membranes	Yes	Yes	Yes
Silica Fume	Delayed lung fibrosis - silicosis	No	No	Yes
Crystalline Silica	Delayed lung fibrosis-silicosis	No	No	Yes
Crystalline Silica	Irritant to skin, eyes, mucous membranes	Yes	Yes	Yes

#### EMERGENCY AND FIRST AID PROCEDURES SECTION 6

Irritants: Wash from skin or flush from eyes using large amounts of water.

Page 1

#### VERSAFLOW 45 ADTECH

#### SECTION 7

#### REACTIVITY DATA

PRODUCT STABILITY..... Stable

Store in dry location prior to use CHEMICAL INCOMPATIBILITY.....

HAZARDOUS DECOMPOSITION PRODUCTS N/A

HAZARDOUS POLYMERIZATION ..... Will not occur

MATERIAL TO AVOID...... None

\_\_\_\_\_\_

#### SPILL AND LEAK PROCEDURES

Most refractory products may be landfilled. However, since your application of this product may change its chemical characteristics, and since disposal procedures may vary with locale and are subject to change, you should consult the governmental authority having jurisdiction for disposal information.

#### SECTION 9

#### SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION..... Where air contaminants can exceed

acceptable criteria, use approved respiratory protection equipment

appropriate to form and concentration of

air contaminants.

VENTILATION..... Local exhaust ventilation should be

provided if routine operation generates dust in excess of allowable limits.

PROTECTIVE GLOVES..... Impermeable

EYE PROTECTION..... Approved safety glasses, goggles, or

faceshields should be used.

FOOT PROTECTION..... Metatarsal safety shoes

OTHER PRECAUTIONS..... None

#### SECTION 10

#### SPECIAL PRECAUTIONS

This product contains crystalline silica - a substance categorized in Group 2A by IARC (The International Agency for Research on Cancer) in 1987. They reported sufficient evidence of the carcinogenicity of crystalline silica to experimental animals, but limited evidence of the carcinogenicity of crystalline silica to humans. The National Toxicology Program (NTP) reported in 1991 that "silica, crystalline (respirable)" may reasonably be anticipated to be a carcinogen.

#### SECTION 11

#### SUPPLIER INFORMATION

This MSDS is based on OSHA FORM 174 but modified to more adequately suit refractory products. All data are subject to reasonable variation. This information is supplied in good faith by Harbison-Walker and is applicable to the product as shipped. Your application of the product may change its characteristics. THE DATA PROVIDED HEREIN ARE BELIEVED CORRECT OR ARE OBTAINED FROM SOURCES BELIEVED TO BE GENERALLY RELIABLE. HARBISON-WALKER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF THIS PRODUCT, AND HARBISON-WALKER ASSUMES NO OBLIGATION OR LIABILITY FOR RELIANCE OF THE INFORMATION CONTAINED IN THIS MSDS. This data is not part of any contract or condition of sale. It is solely supplied as an accommodation to the buyer.

#### SECTION 12

#### COMMENTS

SPECIAL NOTE: This product contains a proprietary organic fiber to promote safe heat up of the refractory. This fiber is noticeable to workers during installation. This fiber is non-toxic and should be treated as nuisance dust.

Page 2

# MATERIAL SAFETY DATA SHEET

RE VE



HARBISON-WALKER REFRACTORIES Division of Dresser Industries, Inc.,

2 Gateway Center, Pittsburgh, Pennsylvania 15222

TELEPHONE: (412) 562-6200

TELETYPE: 710-664-4347

10/01/84

WARNING LABEL: SILICA

NUISANCE DUST

#### DISCLAIMER

This data sheet is based on OSHA FORM 20 but modified to more adequately suit refractory products. All data are subject to reasonable variation. This information is supplied in good faith by Harbison-Walker and is applicable to the product as shipped. Your application of the product may change its characteristics. THE DATA PROVIDED HEREIN ARE BELIEVED CORRECT OR ARE OBTAINED FROM SOURCES BELIEVED TO BE GENERALLY RELIABLE. HARBISON-WALKER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF THIS PRODUCT, AND HARBISON-WALKER ASSUMES NO OBLIGATION OR LIABILITY FOR RELIANCE ON THE INFORMATION CONTAINED IN THIS DATA SHEET. This data is not part of any contract or condition of sale. It is solely supplied as an accomodation to the buyer.

SECTION 1 - P	RODUCT IDENTIFICATION		
Product Tradename:	Type of Refractory:*		
H-W ES CASTABLE - C-CURED	Fireclay Castable		
*For chrome containing refractories, indicate approximate pe  Contains chrome ore consisting predominantly of the minera  Contains chromium III oxide	rcentage, and check applicable bloc il chromite (MgFe).0.(AlFeCr) <sub>2</sub> O <sub>3</sub>	k.	

SEE CHECKED BLOCKS INGREDIENT	GEN. CHEM. FORMULA	C.A.S. NUMBER	PERCENTAGE RANGE	OSHA P.E.L.	ACGIH TLV®	DOCUMENT NO
Quartz  ** Cristobalite  Tridymite  Fused Silica  Coal Tar Products  Petroleum Pitch  Phosphoric Acid  Lime  Sodium Silicate	SiO <sub>2</sub> SiO <sub>2</sub> SiO <sub>2</sub> N/A N/A N/A H <sub>3</sub> PO <sub>4</sub> CaO 03-Si .2Na	001317799 14464-46-1 15468-32-3 007631869 MX8001589 MX8052424 007664382 001305788 006834920	0 - 2% 2 - 5%	10 mg/m <sup>3</sup> % Respirable Quartz +2 ½ Quartz Value ½ Quartz Value NONE 0.2 mg/m <sup>3</sup> NONE 1.0 mg/m <sup>3</sup> (mist) 5.0 mg/m <sup>3</sup> NONE	SAME  SAME  SAME  Use Quartz TLV  SAME  5.0 mg/m <sup>3</sup> SAME  2.0 mg/m <sup>3</sup> NONE	75-120 75-120 75-120 75-120 78-107 78-106 NONE NONE

		SECTION III - PHYSIC	CAL DATA	
Appearance and Odor	: Dark gray color; ear	thy odor.		
Specific Gravity:	.94	pH:ND	<u></u>	
Solubility in Water:	Slightly soluble.			
Soluble Constituents: Other:	Calcium Aluminate Cem	ent		

,	SECTION IV - FIRE AND EXPLOSION DATA	
UNLESS OTHERWISE NOTED,	NONE. Product is a refractory.	
NOTES:		

# MATERIAL SAFETY DATA SHEET

TELEPHONE: 412-562-6200

#### DISCLAIMER

11-18-88

This data sheet is based on OSHA FORM 174 but modified to more adequately suit refractory products. All data are subject to reasonable variation. This information is supplied in good faith by Harbison-Walker and is applicable to the product as shipped. Your application of the product may change its characteristics. THE DATA PROVIDED HEREIN ARE BELIEVED CORRECT OR ARE OBTAINED FROM SOURCES BELIEVED TO BE GENERALLY RELIABLE. HARBISON-WALKER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF THIS PRODUCT, AND HARBISON-WALKER ASSUMES NO OBLIGATION OR LIABILITY FOR RELIANCE OF THE INFORMATION CONTAINED IN THIS DATA SHEET. This data is not part of any contract or condition of sale. It is solely supplied as an accommodation to the buyer.

## SECTION I - PRODUCT IDENTIFICATION

**Product Tradename:** 

H-W ES CASTABLE

H-W ES CASTABLE C

Type of Refractory:

Fireclay Castable

SEE CHECKED BLOCKS INGREDIENT	GEN. CHEM. FORMULA	C.A.S. NUMBER	PERCENTAGE RANGE	OSHA P.E.L.	ACGIH TLV ®	NIOSH CRITERIA DOCUMENT NO
□ Quartz	SiO2	14808-607		10 mg/m³ % Respirable Quartz +2	0.1 mg/m <sup>3</sup>	75-120
☑ Cristobalite	SiO <sub>2</sub>	14464-46-1	10 - 12	1/2 Quartz Value	$0.05 \text{ mg/m}^3$	75-120
☐ Tridymite	SiO <sub>2</sub>	15468-32-3		½ Quartz Value	$0.05 \text{ mg/m}^3$	75-120
☐ Fused Silica	SiO <sub>2</sub>	60676-86-0		20 mppcf	Use Quartz TLV	75-120
☐ Coal Tar Products	N/A	65996-93-2		0.2mg/m <sup>3</sup>	0.2 mg/m <sup>3</sup>	78-107
☐ Petroleum Pitch	N/A	8052-42-4		NONE	0.2 mg/m <sup>3</sup>	78-106
☐ Phosphoric Acid*	H <sub>3</sub> PO <sub>4</sub>	7664-38-2		1.0 mg/m³ (mist)	1.0 mg/m <sup>3</sup>	NONE
☐ Magnesia	MgO	1309-48-4		10 mg/m³	10 mg/m <sup>3</sup>	NONE
☐ Free Alumina*	Al <sub>2</sub> O <sub>3</sub>	1344-28-1		10 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	NONE
ă Lime	CaO	1305-78-8	8 - 9	5.0 mg/m³	2.0 mg/m <sup>3</sup>	NONE
☐ Chrome III Oxide*	Cr2O3	1308-38-9		1.0 mg/m³	0.5mg/m³	NONE

\* Subject to reporting under Section 313, Sara Title III

SECTION III - PHYSICAL DATA					
Appearance and Odor:		ay color; earthy cdor	FORM:		
Specific Gravity:	1.94	pH: ND	Brick		
Solubility in Water:	Slight	Calcium Aluminate Cement	X_ Granular		
Other:			Paste		

#### SECTION IV - FIRE AND EXPLOSION DATA

UNLESS OTHERWISE NOTED, NONE Product is a refractory, and will not burn.

NOTES:

	SECTION V - HEALTH HAZARD DATA*					
*SEE CHECKED BLOCK	EXPOSURE REQUIRED					
INGREDIENT	EFFECTS OF OVEREXPOSURE	PROLONGED	SHORT TERM			
X Free Crystalline Silica	Delayed lung fibrosis - silicosis	V				
☐ Coal Tar Products	Skin, lung mucous membrane carcinogen	V				
	Skin irritation; photosensitization	-/	V			
☐ Petroleum Pitch	(Same as Coal Tar Products)	V	, ,			
☐ Magnesia	Irritant to skin, eyes, mucous membranes, etc.		V			
IX Lime	Irritant to skin, eyes, mucous membranes, etc.		V			
☐ Free Alumina	Irritant to skin, eyes, mucous membranes, etc		V			
☐ Fused Silica	Delayed lung fibrosis-silicosis	V	,			
☐ Phosphoric Acid	Primary Irritant - skin, eyes, etc.		V			
☐ Chrome III Oxide	Irritant to skin, eyes, mucous membranes, etc.		V			
☐ Coal Tar Products: F☐ Other:	Remove from skin by washing with soap and water. DO NOT use solvents. Sa	me for Petroleur	n Pitch.			
	SECTION VI - REACTIVITY DATA					
Hazardous decomposition	STABILITY: Not STABLE   UNSTABLE   COMMENTS: Incompatability (material to avoid)  Hazardous decomposition products: Hazardous Polymerization:   may occur   will not occur					
	SECTION VII - SPILL AND LEAK PROCEDURES					
jurisdiction for disposal i	nformation.					
	SECTION VIII - SPECIAL PROTECTION INFORMATION					
RESPIRATORY PROTECTION (CHECK ONE):   Approved Dust  Other (Specify):  VENTILATION: Local exhaust ventilation should be provided if routine operation generates dust in excess of allowable limits  PROTECTIVE GLOVES (CHECK TYPE):  Acid Resistant  Impermeable  Abrasion Resistant  Other (Specify):  EYE PROTECTION: Approved safety glasses, goggles or faceshields should be used when handling refractory products.  FOOT PROTECTION (CHECK TYPE):  Metatarsal safety  Impermeable  PROTECTIVE CLOTHING (SPECIFY):						
	SECTION IX - SPECIAL PRECAUTIONS					
If block is checked, product contains coal tar pitch, petroleum pitch or creosote. Over-exposure to dust/volatiles may cause cancer and/or irritation to eyes, skin and respiratory tract. Do not breathe dust/fumes; use with proper ventilation. NIOSH approved respirators and protective clothing should be worn while handling this product.						
If block is checked, this resin bonded product contains free formaldehyde and phenol. Exposure to dust and vapor may cause irritation of skin, eyes, nose, and throat. Allergic skin reaction may also occur. Avoid prolonged or repeated contact with eyes or skin; avoid breathing dust or vapor. Wash thoroughly after handling. Wear rubber gloves and approved NIOSH respirator.						
If block is checked, to incidence of cancer in	he product contains crystalline silica for which there is limited evidence of a pontion humans.	ossible associatio	on with the			
Prepared By: C. D. Jamison Emergency Phone: 412-562-6437						

PAGE 1 OF 2

THERMAL CERAMICS

MSDS GROUP: 151 MATERIAL SAFETY DATA SHEET DATE PREPARED: 05/01/87 DATE REVISED: 03/01/88

----- PRODUCT IDENTIFICATION -----

#### INSULATING FIREBRICK PRODUCTS:

K-20 IFB K-23 IFB K-25 IFB K-26 LI IFB K-28 IFB K-30 IFB K-1620 IFB K-3000 IFB INSALCOR DEVELOPMENTAL MIX 230-I

----- SECTION I ------

Manufacturer's Name

Emergency Telephone Number (404) 796-4200

THERMAL CERAMICS

Address (Number, Street, City, State, Zip)

P.O. BOX 923. 2102 OLD SAVANNAH ROAD. AUGUSTA. GEORGIA 30903

Chemical Name and Synonyms Chemical Family

N/A MIXTURE

REFRACTORY INSULATING FIREBRICK

[CAS # 66402-68-4]

----- SECTION II-HAZARDOUS INGREDIENTS -----A. AS MANUFACTURED WT. % TLV/PEL

NONE - SEE ALSO SECTION V

B. AFTER NORMAL USE SEE SECTION IX ----- SECTION III-PHYSICAL DATA ------

Specific Gravity Range (H2O = 1) 0.5 - 1.3Percent Volatile by Volume (%) N/A

Boiling Point N/A Specific Gravity R Vapor Pressure (mm Hg.) N/A 0.5 - 1.3 Vapor Density (Air = 1) N/A Percent Volatile b Solubility in Water INSOLUBLE Evaporation Rate N/A

Appearance and Odor

(Butyl Acetate = 1)

POROUS BRICK - NO ODOR.

----- SECTION IV-FIRE AND EXPLOSION HAZARD DATA ------Flash Point (Method Used) Flammable Limit Extinguishing Media

N/AN/A

Unusual Fire and Explosive Hazards Special Fire Fighting Procedures LEL UEL N/A N/A N/A N/A

MATERIAL SAFETY DATA SHEET PAGE 2 OF 2 MSDS GROUP: 151

THERMAL CERAMICS

----- SECTION V-HEALTH HAZARD DATA -----

imary Route of Entry

INHALATION, INGESTION, SKIN CONTACT

Effects of Overexposure

DURING INSTALLATION, IT IS COMMON TO HANDLE AND CUT THESE PRODUCTS. THE CUTTING PROCESS MAY GENERATE RESPIRABLE NUISANCE DUST [TLV: 10 mg/cu m, total dust; PEL: 5 mg/cu m, respirable dust and 15 mg/cu m, total dust]. EXPOSURE TO NUISANCE DUST MAY CAUSE TEMPORARY IRRITATION OR DISCOMFORT OF THE SKIN, EYES, NOSE, THROAT, OR LUNGS AND MAY AGGRAVATE BRONCHIAL DISORDERS.

THESE PRODUCTS DO NOT APPEAR ON ANY NTP OR LARC LISTS/REPORTS OF CARCINOGENS.

Emergency and First Aid Procedures

Inhalation: REMOVE TO FRESH AIR. Ingestion: DRINK PLENTY OF WATER.

Skin: WASH WITH MILD SOAP AND WATER. Eyes: FLUSH WITH PLENTY OF WATER. IF

IRRITATION PERSISTS, CALL A PHYSICIAN.

----- SECTION VI-REACTIVITY DATA ------Stability: STABLE Hazardous Polymerization: WILL NOT OCCUR

Materials/Conditions to Avoid: NONE

----- SECTION VII-SPILL OR LEAK PROCEDURES ------

Spill or Leak: N/A

Waste Disposal: WASTES ARE NOT HAZARDOUS WASTES AS DEFINED BY RCRA (40 CFR 261).

OMPLY WITH FEDERAL, STATE AND LOCAL REGULATIONS. METHOD OF DISPOSAL -

ANDFILL. RQ - N/A

----- SECTION VIII SPECIAL PROTECTION INFORMATION -----

Respiratory Protection

DUST RESPIRATOR IN COMPLIANCE WITH OSHA STANDARD 29 CFR 1910.134 (MSHA/NIOSH-APPROVED, AIR PURIFYING, HALF MASK OR FULL FACEPIECE RESPIRATOR

WITH APPROPRIATE FILTER PAD OR CARTRIDGE)

Local Exhaust FOLLOW OSHA STANDARD 29 CFR 1910.94 Ventilation Mechanical (General) FOLLOW OSHA STANDARD 29 CFR 1910.94

Protective Gloves

Eye Protection RECOMMENDED GOGGLES/SAFETY GLASSES RECOMMENDED

Other Protective Equipment

AS REQUIRED TO MEET APPLICABLE OSHA STANDARDS.

----- SECTION IX SPECIAL PRECAUTIONS -----

Precautions To Be Taken After Service and Upon Removal AS MANUFACTURED, THESE PRODUCTS ARE ALUMINOSILICATES WHICH COULD TRANSFORM UPON HEATING TO MULLITE AND CRISTOBALITE (A FORM OF CRYSTALLINE SILICA). REMOVAL OF THESE PRODUCTS AFTER SERVICE MAY GENERATE DUST. REPEATED INHALATION OF RESPIRABLE FREE CRYSTALLINE SILICA DUST MAY CAUSE DELAYED LUNG INJURY (SILICOSIS). IARC HAS PLACED CRYSTALLINE SILICA IN CATEGORY 2A (IARC BELIEVES THERE IS SUFFICIENT EVIDENCE OF CARCINOGENICITY IN ANIMALS BUT EVIDENCE FOR THE CARCINOGENICITY TO HUMANS IS LIMITED). THE RECOMMENDED PEL FOR RESPIRABLE CRIS-TOBALITE IS CALCULATED FROM THE FORMULA: 10 mg/cu m

1/2(-----) % Respirable Quartz + 2

'HE RECOMMENDED TLV FOR RESPIRABLE CRISTOBALITE IS 0.05 mg/cu m. APPROPRIATE VENTILATION AND RESPIRATORY PROTECTION SHOULD BE PROVIDED IN COMPLIANCE WITH OSHA 29 CFR 1910.94 AND 1910.134, RESPECTIVELY.

6822

# MATERIAL SAFETY DATA SHEET

Date: 09/06/96

Nos. 6822, 6831, 7686 7621, 7471, 7470

## A. P. GREEN INDUSTRIES, INC. GREEN BOULEVARD, MEXICO, MO 65265 EMERGENCY TELEPHONE NUMBER — 314-473-3626

#### SECTION !

PRODUCT NAME:

-> GREFCON®

→ GREFCON® 60 Plus

→ GREFCON 60 Supra

→ GREFCON 60 Supra Plus

→ GREFCON 60 S/C

→ GREFCON 60 S/C Plus

GREFCON 60 EQ Plus

GREFCON 60 F

GREFCON 60 F
GREFCON 60 F Plus
GREFCON 60 XC
GREFCON 60 XC Plus
GREFCON 60 GLS
GREFCON 60 GLS Plus
GREFCON 60 M
GREFCON 60 M Plus

PRODUCT TYPE:

Castable Refractory

NFPA/WHMIS Rating: 1-0-0

CHEMICAL FAMILY:

SiO, **33-35%** CaO 1-2%

 $Al_2O_x = 62-64\%$ Fe<sub>2</sub>O<sub>3</sub>

FORMULA: Not Applicable

#### SECTION II PRODUCT HAZARDOUS INGREDIENTS

CHEMICAL	TLV-TWA	CAS#
Cristobalite (SiO <sub>2</sub> )	0.05 mg/m <sup>3</sup> *	14464-46-1
(5-10%)	Respirable Dust	
Quartz (SiO <sub>2</sub> )	0.1 mg/m <sup>a*</sup>	14808-80-7
(<2%)	Respirable Dust	
Amorphous Silica	2 mg/m³*	69012-64-2
(4-6%)	Respirable Dust	
Alumina (Al <sub>2</sub> O <sub>2</sub> )	10 mg/m <sup>3-</sup>	1344-28-1
(13-15%)	Total Dust	
Refractory Cement	None (See Section IV)	12005-57-1
(<5%)		

<sup>\*</sup>Source: American Conference of Governmental Industrial Hygienists, 1995-1996.

#### SECTION III HAZARDS INFORMATION

This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as a Class 2A carcinogen. Their study concluded that sufficient evidence for carcinogenicity exists in experimental animals and that limited evidence for carcinogenicity exists in humans.

p, 02

Feb 10 '97 79:91

HERE ENVIRONMENTAL SRV FAX:573-475-3339

FEB 10 '97 13:59

503 227 7947

PAGE.001

Material Safety Data Sheet Product: GREFCON 60, etc. 09/06/96

Dust from product at any stage of its use or during tear-out after service may, especially on long exposure, lead to lung disease unless respiratory protection is employed. NIOSH approved respirators should be worn any time that refractories are torn out after service. While a respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

#### SECTION IV FIRST AID MEASURES

#### EFFECT OF OVEREXPOSURE:

EYES:

ACUTE:

Dust can cause mechanical irritation. Product's cement can cause eye

injury.

CHRONIC:

None Known

SKIN:

ACUTE:

Product's cement can cause skin irritation.

CHRONIC:

None Known

INHALATION: ACUTE:

Dust generated can cause breathing discomfort or irritation.

CHRONIC:

Long-term exposure to dust may cause lung damage.

ACUTE: INGESTION:

CHRONIC:

Unknown Unknown

FIRST AID MEASURES:

EYES:

Flush with clean water for 15 minutes. If irritation occurs, consult physician.

SKIN:

Wash with soap and water. If irritation occurs, consult physician.

INHALATION: Remove to fresh air. Seek medical attention.

INGESTION:

Contact physician immediately. Do not induce vomiting unless instructed to do so by physician. Product is non-toxic as supplied, but its abrasive nature could damage

internal organs.

#### SECTION V FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES:

SERVICES OF DECISION SHOTTED AN ARMEDIA SHOWS SHOW SHOW SHOULD SERVICE AND ADDRESS OF THE SERVICE AND

None

EXTINGUISHING MEDIA:

Not Combustible

FIRE FIGHTING INSTRUCTIONS:

No special instructions.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

#### SECTION VI ACCIDENTAL RELEASE MEASURES

SMALL/LARGE SPILL: If dry, predampen and sweep or shovel up. If wet (after mixing with water for use), sweep or shovel up and place in a container for disposal.

P.03

ESP 10 .32 18:54

HERE ENVIRONMENTAL SRV Fex:573-473-3339

FEB 10 '97 14:00

503 227 7947

PAGE.002

P. 03/04

MS DECEMBER NEW AND ADDRESS OF THE PROPERTY OF

Material Safety Data Sheet Product: GREFCON 60, etc. 09/06/96

3

#### SECTION VIL HANDLING AND STORAGE

Store in a dry place. Product is non-flammable.

#### SECTION VIII **EXPOSURE CONTROLS/PERSONAL PROTECTION**

ENGINEERING CONTROLS:

General mechanical ventilation is usually adequate (SECTION II).

RESPIRATORY PROTECTION: Use a NiOSH approved respirator when working around dried material

and when removing this product after service.

EYE PROTECTION:

Goggles or safety glasses with side shields should be worn.

SKIN PROTECTION:

Gloves and long-sleeved and long-legged clothing should be worn to

prevent skin contact.

OTHER:

Safety shoes should be worn to prevent foot injury from accidentally

dropped bags of castable.

#### SECTION IX PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:

Gray, Granular Mixture

BOILING POINT:

Not Applicable

9-11

SOLUBILITY IN WATER:

PROMOTE PROGRAMMENT STORES CONTROL OF STORES CON

None

ODOR:

pH:

None

SPECIFIC GRAVITY:

2.7

MELTING POINT:

Not Applicable

#### SECTION X STABILITY AND REACTIVITY

Product is stable under normal conditions of use, storage, and transportation.

Product can react with concentrated acids.

#### SECTION XI TOXICOLOGICAL INFORMATION

LDso or LCse for oral, dermal, or inhalation routes of administration: ne data for product. 

#### SECTION XII **ECOLOGICAL INFORMATION**

Ecotoxicological/chemical fate information: not available.

#### SECTION XIII DISPOSAL CONSIDERATIONS

As supplied, product may be disposed of in an approved landfill, in accordance with federal, state, and local regulations.

P. 04

Feb 10 '97 16:55

AP6I ENVIRONMENTAL SRV Fax:573-473-3339

FEB 10 '97 14:00

503 227 7947

PAGE.003

Material Safety Data Sheet Product: GREFCON 60, etc.

09/06/96

Supplier can make no statement concerning disposal of used product, since product may become contaminated by hazardous materials during use.

#### SECTION XIV TRANSPORT INFORMATION

U.S.A. DOT:

Not Regulated

Canadian TDG Hazard Class & PIN:

Not Regulated

#### SECTION XV REGULATORY INFORMATION

TSCA Status: All Components Listed Canadian DSL: All Components Listed

SARA Title III, Section 313: This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in Section II - HAZARDOUS INGREDIENTS section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

#### SECTION XVI OTHER INFORMATION

MSDS Status: New format

Note: This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith

Senior Technical Consultant Phone: 314-473-3392

JH:\MSDS\CURRENT\GCON60.096

EEP TO .64 IP:22 SO 'd

HER ENTIRONMENTAL SRV FRX:575-473-3339

503 227 7947

1065

# MATERIAL SAFETY DATA SHEET

Date: 02/29/96

Nos. 1065

# A. P. GREEN INDUSTRIES, INC. GREEN BOULEVARD, MEXICO, MO 65265 EMERGENCY TELEPHONE NUMBER - 573-473-3626

# SECTION I

PRODUCT NAME:

MIZZOU® CASTABLE

MIZZOU®

MIZZQU®

CASTABLE Plus

MIZZOU® GR Plus

MIZZOU® CASTABLE Supra MIZZOU CASTABLE Supra Plus

MIZZOU GR Plus MIZZOU GR Supra MIZZOU GR Supra Plus

PRODUCT TYPE:

Castable Refractory

CHEMICAL FAMILY:

SiO2 = 29-36%  $Al_2O_3 = 57-63\%$ 

FORMULA: Not Applicable

CaO 2-4%  $Fe_2O_3 = 1-2\%$ 

# SECTION II PRODUCT HAZARDOUS INGREDIENTS

CHEMICAL	TLV-TWA	CAS #
Cristobalite (SiO <sub>2</sub> )	0.05 mg/m <sup>3</sup> *	14464-46-1
(5-15%)	Respirable Dust	
Quartz (SiQ <sub>2</sub> )	0.1 mg/m <sup>3</sup> *	14808-60-7
(<2%)	Respirable Dust	
Amorphous Silica	2 mg/m³*	69012-64-2
(<5%)	Respirable Dust	
Alumina (Al <sub>2</sub> O <sub>3</sub> )	10 mg/m <sup>3*</sup>	1344-28-1
(<5%)**	Total Dust	
Refractory Cement (<15%)	None (See Section V)	12005-57-1

<sup>\*</sup>Source: American Conference of Governmental Industrial Hygienists, 1995-1996.

\*\*MIZZOU GR and MIZZOU GR Plus only.

#### SECTION III HAZARDS INFORMATION

This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as a Class 2A carcinogen. Their study concluded that sufficient evidence for carcinogenicity exists in experimental animals and that limited evidence for carcinogenicity exists in humans.

Material Safety Data Sheet Product: MIZZOU CASTABLE, etc.

02/29/96

2

Dust from product at any stage of its use or during tear-out after service may, especially on long exposure, lead to lung disease unless respiratory protection is employed. NIOSH approved respirators should be worn any time that refractories are torn out after service. While a respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

# SECTION IV FIRST AID MEASURES

## EFFECT OF OVEREXPOSURE:

EYES:

ACUTE:

Dust can cause mechanical irritation. Product's cement can cause eye

injury.

CHRONIC:

None Known

SKIN:

ACUTE:

Product's cement can cause skin irritation.

CHRONIC:

None Known

INHALATION: ACUTE:

CHRONIC:

Dust generated can cause breathing discomfort or irritation.

Long-term exposure to dust may cause lung damage.

INGESTION:

ACUTE:

Unknown

CHRONIC:

Unknown

# FIRST AID MEASURES:

EYES:

Flush with clean water for 15 minutes. If irritation occurs, consult physician.

SKIN:

Wash with soap and water. If irritation occurs, consult physician.

INHALATION: Remove to fresh air. Seek medical attention.

INGESTION:

Contact physician immediately. Do not induce vomiting unless instructed to do so by

physician. Product is non-toxic as supplied, but its abrasive nature could damage

internal organs.

# SECTION V FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES:

EXTINGUISHING MEDIA:

Not Combustible

FIRE FIGHTING INSTRUCTIONS:

No special instructions.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

## SECTION VI ACCIDENTAL RELEASE MEASURES

SMALL/LARGE SPILL: If dry, predampen and sweep or shovel up. If wet (after mixing with water for use), sweep or shovel up and place in a container for disposal.

Material Safety Data Sheet Product: MIZZOU CASTABLE, etc.

02/29/96

3

# SECTION VII HANDLING AND STORAGE

Store in a dry place. Product is non-flammable.

# SECTION VIII EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:

General mechanical ventilation is usually adequate (SECTION II).

RESPIRATORY PROTECTION: Use a NIOSH approved respirator when working around dried material

and when removing this product after service.

EYE PROTECTION:

Goggles or safety glasses with side shields should be worn.

SKIN PROTECTION:

Gloves and long-sleeved and long-legged clothing should be worn to

prevent skin contact.

OTHER:

Safety shoes should be worn to prevent foot injury from accidentally

dropped bags of castable.

## SECTION IX PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:

Gray, Granular Mixture

BOILING POINT:

Not Applicable

pH:

7-8

SOLUBILITY IN WATER:

None

ODOR:

None

SPECIFIC GRAVITY:

2.7

MELTING POINT:

Not Applicable

# SECTION X STABILITY AND REACTIVITY

Product is stable under normal conditions of use, storage, and transportation.

Product can react with concentrated acids.

# SECTION XI TOXICOLOGICAL INFORMATION

LDso or LCso for oral, dermal, or inhalation routes of administration: no data for product.

# SECTION XII **ECOLOGICAL INFORMATION**

Ecotoxicological/chemical fate information: not available.

## SECTION XIII DISPOSAL CONSIDERATIONS

As supplied, product may be disposed of in an approved landfill, in accordance with federal, state, and local regulations.

Material Safety Data Sheet Product: MIZZOU CASTABLE, etc.

02/29/96

Supplier can make no statement concerning disposal of used product, since product may become contaminated by hazardous materials during use.

# SECTION XIV TRANSPORT INFORMATION

U.S.A. DOT:

Not Regulated

Canadian TDG Hazard Class & PIN;

Not Regulated

# SECTION XV REGULATORY INFORMATION

TSCA Status: All Components Listed Canadian DSL: All Components Listed

SARA Title III, Section 313: This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in Section II - HAZARDOUS INGREDIENTS section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

# SECTION XVI OTHER INFORMATION

MSDS Status: New format.

Note: This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith

Senior Technical Consultant Phone: 573-473-3392

JH:\MSDS\CURRENT\MC.026



A Member of The Didier Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

## NORTH AMERICAN REFRACTORIES PRODUCT SAFETY DATA SHEET

MANUFACTURER

MSDS # 3040-00

NORTH AMERICAN REFRACTORIES

Vendor:

Emergency Phone Number East (814) 236-3890 West (415) 432-4741 Canada (416) 765-4404 MSDS prepared by: NORTH AMERICAN REFRACTORIES Technical Center (814) 234-7981

Date Issued: 07/17/94

Date Revised: 08/27/91

less than

less than

Product Type: Refractory Castable / Gun Material

Trade Name: LITECRETE 50

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION I - PRODUCT IDENTIFICATION

\*\*\*\*\*\*\*\*

Chemical Name: Insulating Castable Chemical Family: A1203, S102, CaO

\*\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION II - CHEMICAL COMPOSITION

\*\*\*\*\*\*\*

Hazardous Ingredients:

CAS Number:

PCT:

20%

Crystalline Silica including: N/A

14808-60-7

Quartz Cristobalite

14464-46-1

Tridymite

15468-32-3

Other Ingredients:

CAS Number:

FCT:

Alumina Silicate
Hydrous Alumina Silicate
Hydraulic Setting Cement
Silica

1302-93-6 1302-87-0 12042-68-1 14808-60-7 less than 45% less than 15% less than 45%

SECTION III - PHYSICAL DATA

南非本非非非非非非非非非

30%

Appearance and Odor: Tan, granular, dry mixture, odorless.



A Member of The Didier Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

\*\*\*\*\*\*\*

SECTION IV - FIRE AND EXPLOSION HAZARD \*\*\*\*\*\*\*\*\*\*

Flammability: This product is non-flammable and will not support combustion.

\*\*\*\*\*\*\*

SECTION V - HEALTH HAZARD

\*\*\*\*\*\*\*\*

Threshold Limit Value:

For respirable dust containing crystalline silica:

OSHA :

ACGIM: Quartz.....0.1mg/m3

Cristobalite . . . 0.05mg/m3

Tridymite.....0.05mg/m3

Effects of Overexposure:

#### CEMENT:

Cement may cause irritation to skin and eyes. Low toxicity via inhalation route. Pulmonary fibrosis due to cement dust occurs rarely if at all. Cement may be an allergen in some people. Note: LD50 and LC50 is not available for "Cement"

### CRYSTALLINE SILICA:

Chronic overexposure to dust containing respirable sized crystalline silica (quartz, cristobalite, and tridymite) can cause delayed lung injury (silicosis).

> Points of attack: Respiratory system and lungs.

Route of entry: Inhalation.

Inhalation of dust containing crystalline silica may contribute to pre-existing pulmonary diseases such as asthma and lung disorders associated with the smoking of tobacco.

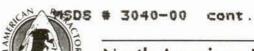
Some recent animal studies have caused the International Agency for Research on Cancer (IARC) to categorize crystalline silica as a ZA carcinogen. A ZA carcinogen is one which:

- (1) there is sufficient evidence for the carcinogenicity to experimental animals.
- (2) there is limited evidence of the carcinogenicity to humans.

Crystalline silica has been listed in the most recent NTP Report on Carcinogens.

For more information on crystalline silica refer to:

- (1) IARC Monograph, Volume 42
- (2) NIOSH Document No. 75-120
- (3) NTP Report on Carcinogens



A Member of The Didier Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

Toxicity data:

Quartz:

LCLo: 300ug/m3 / 10Y-I

inhalation human

Cristobalite: TCLo: 15 mppcf/8H/17.9Y-I

inhalation human

Tridymite:

TCLo: 16 mppcf/8H/17.9Y-I

inhalation human

Note: LD50 and LC50 not available.

With the exception of: Crystalline silica

No ingredient in this product is found on either

the Federal OSHA, NTP, or IARC list of

carcinogens.

Emergency and First Aid Data:

Skin: Wash thoroughly with soap and water.

Inhalation: Remove to fresh air.

Eyes: Flush with water for 15 minutes and get

medical help.

SECTION VI - REACTIVITY DATA

非非非非非非非非非非非非

Stability and Reactivity: This product is stable and non-reactive.

Hazardous Decomposition: Crystalline silica levels in used refractories

may be higher or lower than as-shipped depending on service conditions. Hygiene monitoring must be done to insure the proper employee protection

during tearout.

南南南南南南南南南

SECTION VII - SPILL AND LEAK PROCEDURES

水水水水水水水水水水水水水水水水

Steps to be Taken in Case of a Spill:

Avoid generating dust exposure during cleanup.

Waste Disposal Method: Dispose of material according to local, state or

federal regulations and as final used condition of

the product dictates.

李帝帝帝帝帝帝帝帝帝帝帝帝帝帝帝

SECTION VIII - INDUSTRIAL HYGIENE INFORMATION \*\*\*\*\*

Ventilation: Local exhaust recommended to maintain exposures

below TLV.

Respiratory Protection: NIOSH approved dust type for exposures above TLV.

Protective Gloves: Impervious gloves recommended.

Eye Protection: Recommended.

**水市市水市市水市市水市市市市市市市** 

SECTION IX - SPECIAL PRECAUTIONS

市市市市市市市市市市市市市市

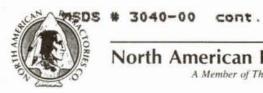
Special Precautions: Avoid dust generation.

Frecautionary Labeling: Product contains crystalline silica and

hydraulic setting cement.

WARNING: Prolonged inhalation of product

dust may cause delayed lung injury (silicosis).



A Member of The Didier Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

Contact may cause irritation to eyes and skin.

\*\*\*\*\*\*\*

SECTION X - SPECIAL INFORMATION

\*\*\*\*\*\*\*

WARNING: Steam spalling may occur from improper drying, curing, and firing (heat-up). Steam spalling of thick refractory sections can be explosive in character. Potential for serious injury exists from failure to follow the recommended schedule. This schedule is available from North American Refractories Co. For more information, contact your sales representative or call North American Refractories Co. 216-621-5200.



A Member of The Didier Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

# NORTH AMERICAN REFRACTORIES PRODUCT SAFETY DATA SHEET

MANUFACTURER

MSDS # 4028-00

NORTH AMERICAN REFRACTORIES

Vendor:

Emergency Phone Number East (814) 236-3870 West (415) 432-4741 Canada (416) 765-4404

MSDS prepared by: NORTH AMERICAN REPRACTORIES Technical Center (814) 234-7981

Date Issued: 03/28/94

Date Revised: 05/10/93

Product Type: Refractory Mortar / Coating

Trade Name: SUPER TENAX

Product SARA Hazard Class: (1) Immediate or Acute (Irritant)

(2) Delayed or Chronic

WHMIS Hazard Class (CANADA): Class D - Division 2: Toxic Material (CPR 60)

\*\*\*\*\*\*\*\*\*\*

SECTION I - PRODUCT IDENTIFICATION

非非非非非非非非非非非非

Chemical Name: Fireclay Mortar Wet, Air Setting

A1203, S102, Na20 Chemical Family:

在海水水水水水水水水水水水水水水水 SECTION II - CHEMICAL COMPOSITION

本水水水水水水水水水

Hazardous Ingredients:

CAS Number:

PCT:

Crystalline Silica including: N/A

30.0 - 50.0%

14808-60-7 Quartz Cristobalite 14464-46-1 Tridymite 15468-32-3

Other Ingredients:

CAS Number:

PCT:

7782-42-5 Graphire 0.1 - 1.0% Silica 14808-50-7 10.0 -30.0% Hydrous Alumina Silicate 1332-58-7 10.0 -30.0% Sodium Silicate 6834-92-0 10.0 -30.0% Hydrous Alumina Silicate 12141-46-7 30.0 - 50.0%



A Member of The Didier Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

本家物格家家老家家家家家家家家家家

SECTION III - PHYSICAL DATA

\*\*\*\*\*\*\*\*\*\*\*\*

Appearance and Odor: Tan, fine-grained, wet mixture, odorless.

Odor threshold (p.p.m.): Not applicable.

Specific Gravity: Not available. Vapor Pressure (mm): Not applicable.

Vapor Density (air=1): Not applicable.

Boiling Point ("F): Not available. Solubility in Water: Not available.

% Volatile (by weight): Not available.

pH: 9 to 10.9 range Density: Not available.

Coefficient of Water/Oil Distribution: Not applicable.

\*\*\*\*\*\*\*\*\*\*

SECTION IV - FIRE AND EXPLOSION HAZARD \*\*\*\*\*\*\*\*\*\*

Flammability: This product is non-flammable and will not support combustion.

本班老班本班班本班班本班本班本

SECTION V - HEALTH HAZARD

李水水中水水水水水水水水

Threshold Limit Value:

For Graphite:

ACGIH.....2.5 mg/m3 respirable

For respirable dust containing crystalline silica:

OSHA :

Cristobalite ... . 0.05mg/m3 Tridymite.....0.05mg/m3

For all ingredients not listed above:

OSHA:.....10mg/m3 total dust

ACGIH:..........10mg/m3 total dust

Effects of Overexposure: Chronic exposure to dust could cause pulmonary

problems.

CRYSTALLINE SILICA:

Chronic overexposure to dust containing respirable sized crystalline silica (quartz, cristobalite, and tridymite) can cause delayed lung injury (Silicosis).

Points of attack: Respiratory system and lungs.

Route of entry: Inhalation.

Inhalation of dust containing crystalline silica may contribute to pre-existing pulmonary diseases such as asthma and lung disorders associated with the smoking of tobacco.

A Member of The Didier Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

Some recent animal studies have caused the International Agency for Research on Cancer (IARC) to categorize crystalline silica as a 2A carcinogen. A ZA carcinogen is one which:

- there is sufficient evidence for the carcinogenicity to experimental animals.
- (2) there is limited evidence of the carcinogenicity to humans.

Crystalline silica has been listed in the most recent NTP Report on Carcinogens.

For more information on crystalline silica refer to:

- (1) IARC Monograph, Volume 42
- (2) NIOSH Document No. 75-120
- (3) NTP Report on Carcinogens

Toxicity data:

Quartz:

LCLo: 300ug/m3 / 10Y-I

inhalation human

Cristobalite: TCLo: 15 mppcf/SH/17.9Y-I

inhalation human

Tridymite: TCLo: 15 mppcf/8H/17.9Y-I

inhalation human

Note: LD50 and LC50 not available.

## SODIUM SILICATE:

Sodium silicate used in this product may cause skin and eye irritation.

Toxicity data:

Skin-human - 250mg/24hr - Severe.

LDLo: 250mg/kg (oral-dog)

LDLo: 200mg/kg (interperitoneal-guinea pig)

#### CARCINOGENICITY INFORMATION

With the exception of:

Crystalline silica

No ingredient in this product is found on either the Federal OSHA, NTP, or IARC list of

carcinogens.

Emergency and First Aid Data:

Eyes: Flush with water and get medical help. Skin: Wash thoroughly with soap and water.

Inhalation: Remove to fresh air.

\*\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION VI - REACTIVITY DATA

非字本本本本本本本本本本

Stability and Reactivity: This product is stable and non-reactive. Hazardous Decomposition: Crystalline silica levels in used refractories

may be higher or lower than as-shipped depending on service conditions. Hygiene monitoring must



A Member of The Didier Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

be done to insure the proper employee protection during tearout.

李承安安李李安永东

SECTION VII - SPILL AND LEAK PROCEDURES

非非非常非常非常非常非常非常

Steps to be Taken in Case of a Spill:

Avoid generating dust exposure when materials

are dried.

Waste Disposal Method: Dispose of material according to local, state or

federal regulations and as final used condition of

the product dictates.

安全老爷爷爷爷爷爷爷爷爷爷爷爷

SECTION VIII - INDUSTRIAL HYGIENE INFORMATION \*\*\*\*\*\*

Ventilation: Local exhaust recommended to maintain exposures

below TLV.

Respiratory Protection: NIOSH approved dust type for exposures above TLV.

Protective Gloves: Phenol - Impervious gloves recommended.

Eye Protection: Recommended.

本本事治療學學者亦不亦亦亦亦亦亦亦

SECTION IX - SPECIAL PRECAUTIONS

本本章章章章章章本章

Special Precautions: Avoid dust generation.

Dust created during demolition of used product may

contain crystalline silica.



A Member of The Didier Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

## NORTH AMERICAN REFRACTORIES PRODUCT SAFETY DATA SHEET

MANUFACTURER

MSDS # 4012-00

NORTH AMERICAN REFRACTORIES

Vendor:

Emergency Phone Number East (814) 236-3890 West (415) 432-4741 Canada (416) 765-4404 MSDS prepared by: NORTH AMERICAN REFRACTORIES Technical Center (814) 234-7981

Date Issued: 06/05/94

Date Revised: 09/24/92

Product Type: Refractory Mortar / Coating

Trade Name: NARPHOS 858 (WET)

Product SARA Hazard Class: (1) Immediate or Acute (Irritant)

(2) Delayed or Chronic

WHMIS Harard Class (CANADA): Class D - Division 2: Toxic Material (CPR 60)

SARA NOTICE: This product may contain a chemical(s) subject to

the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and Part 40 CFR

Part 372. For the name and amount of the subject chemical, see Section II - CHEMICAL COMPOSITION

of this Product Safety Data Sheet.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION I - PRODUCT IDENTIFICATION

Chemical Name: High Alumina Air-Set Mortar Chemical Family: Al203, S102, H3P04

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION II - CHEMICAL COMPOSITION

CHEMICAL COMPOSITION \*\*\*\*\*\*\*\*\*

Hazardous Ingredients:

CAS Number:

PCT:

本都本都本者在本者水本本本

Crystalline Silica including: N/A

1.0 - 5.0%

Quartz

14808-60-7

Cristobalite

14464-46-1

Tridymite

15468-32-3

Other Ingredients:

CAS Number:

PCT:

Alumina Silicate

1302-93-8

60.0 - 100.0%

Hydrous Alumina Silicate

1302-87-0

5.0 - 10.0%

MSDS # 4012-00 cont.

# North American Refractories Co.

A Member of The Didier Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

Phosphate acid binder(as P205) 7864-38-2 10.0 - 30.0% Aluminum Sulfate 10043-01-3 3.0 - 7.0% Alumina 1344-28-1 3.0 - 7.0%

\*\*\*\*\*\*\*\*\*\*\*

在专业作品水水水水水水水水水水水水水

SECTION III - PHYSICAL DATA

本水本水水水水水水水水水水

\*\*\*\*\*\*\*\*\*

Appearance and Odor: Gray, fine-grained, wet mixture with H25 odor

Odor threshold (p.p.m.): Not available.

Specific Gravity: Not available.
Vapor Pressure (mm): Not available.
Vapor Density (air=1): Not available.
Boiling Point (\*F): Not available.
Solubility in Water: Not available.
% Volatile (by weight): Not available.

pH: 2.5 to 5 range Density: Not available.

Coefficient of Water/Oil Distribution: Not available.

\*\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION IV - FIRE AND EXPLOSION HAZARD \*\*\*\*\*\*\*\*\*

SECTION V - HEALTH HAZARD

Flammability: This product is non-flammable and will not support

combustion.

Threshold Limit Value: Phosphoric Acid Mist | 1 mg/m3

For respirable dust containing crystalline silica:

OSHA :

ACGIH: Quartz.....0.1mg/m3

Cristobalite...0.05mg/m3 Tridymite.....0.05mg/m3

For all ingredients not listed above:

OSHA:.....10mg/m3 total dust

ACGIH: ...... 10mg/m3 total dust

Effects of Overexposure:

CRYSTALLINE SILICA:

Chronic overexposure to dust containing respirable sized crystalline silica (quartz, cristobalite, and tridymite) can cause delayed lung injury (silicosis).

Points of attack: Respiratory system and lungs.

Route of entry: Inhalation.

Inhalation of dust containing crystalline silica may contribute to pre-existing pulmonary diseases such as asthma and lung disorders associated with the smoking of tobacco.

Some recent animal studies have caused the Inter-

A Member of The Didier Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

national Agency for Research on Cancer (IARC) to categorize crystalline silica as a ZA carcinogen. A ZA carcinogen is one which:

- there is sufficient evidence for the carcinogenicity to experimental animals.
- (2) there is limited evidence of the carcinogenicity to humans.

Crystalline silica has been listed in the most recent NTP Report on Carcinogens.

For more information on crystalline silica refer to:

- (1) IARC Monograph, Volume 42
- (2) NIOSH Document No. 75-120
- (3) NTP Report on Carcinogens

Toxicity data: Quartz:

LCLo: 300ug/m3 / 10Y-I

inhalation human

Cristobalite: TCLo: 16 mppcf/8H/17.9Y-I

inhalation human

Tridymite: TCLo: 16 mppcf/8H/17.9Y-I

inhalation human

Note: LD50 and LC50 not available.

#### ALUMINUM SULPHATE:

The aluminum sulphate used in this product may cause irritation to the skin, eyes and lungs. Toxicity data:

LD50: 6207 mg/kg (oral-mouse)

LDSO: 270 mg/kg (intraperitoneal-mouse)

#### PHOSPHATE BINDER:

Phosphate binder may irritate skin and eyes.

CARCINGGENICITY INFORMATION

With the exception of:

Crystalline silica

No ingredient in this product is found on either the Federal OSHA, NTP, or IARC list of carcinggens.

Emergency and First Aid Data:

Eyes: Flush with water and get medical help. Skin: Wash thoroughly with soap and water.

Inhalation: Remove to fresh air.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION VI - REACTIVITY DATA

\*\*\*\*\*\*\*\*\*\*

Stability and Reactivity: This product is stable and non-reactive. Hazardous Decomposition: May generate SO2 fumes.

ition: May generate 502 fumes.

Crystalline silica levels in used refractories may be higher or lower than as-shipped depending



A Member of The Didier Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

on service conditions. Hygiene monitoring must be done to insure the proper employee protection during tearout.

幸幸辛辛辛辛辛辛

SECTION VII - SPILL AND LEAK PROCEDURES

本本本本本本本本本本本本本本本本本本

Steps to be Taken in Case of a Spill:

Wash area down with water.

Waste Disposal Method: Dispose of material according to local, state or

federal regulations and as final used condition of

the product dictates.

\*\*\*\*\*\*\*\*\*\*

SECTION VIII - INDUSTRIAL HYGIENE INFORMATION \*\*\*\*\*\*

Respiratory Protection: Approved dust and/or organic vapor respirator for

exposures above TLV.

Protective Gloves: Impervious gloves recommended.

Eye Protection: Recommended.

\*\*\*\*\*\*\*\*\*\*\*

SECTION IX - SPECIAL PRECAUTIONS

**水水水水水水水水水水水**水

Special Precautions: Avoid high temperature storage.

Precautionary Labeling: Product contains crystalline silica and phosphoric

acid or phosphate binder and aluminum sulfate. WARNING: Prolonged inhalation of product

dust may cause delayed lung injury (silicosis). Contact may cause irritation to eyes and skin.



A Member of The Didier Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

## NORTH AMERICAN REFRACTORIES PRODUCT SAFETY DATA SHEET

MANUFACTURER

MSDS # 5040-00

NORTH AMERICAN REFRACTORIES

Vendor:

Emergency Phone Number East (814) 236-3890 West (415) 432-4741 Canada (416) 765-4404

MSDS prepared by: NORTH AMERICAN REFRACTORIES Technical Center (814) 234-7981

Date Issued: 01/31/93

Date Revised: 08/27/91

Product Type: Refractory Plastic Or Ram Material

Trade Name: SUPER PYRAMID AS

\*\*\*\*\*\*\*

SECTION I - PRODUCT IDENTIFICATION \*\*\*\*\*\*\*\*\*\*\*

Chemical Name: High Alumina Plastic, Air-Setting

Chemical Family: A1203.Si02,A12(S04)3.

\*\*\*\*\*\*\*\*\*

SECTION II - CHEMICAL COMPOSITION

\*\*\*\*\*\*\*\*\*

Hazardous Ingredients:

CAS Number:

PCT:

Crystalline Silica including: N/A

less than

30%

Quartz

14808-60-7 14464-46-1

Cristobalite Tridymite

15468-32-3

Other Ingredients:

CAS Number:

PCT:

25%

Alumina Silicate Hydrous Alumina Silicate

1302-93-8 1302-87-0

less than 80% less than

Aluminum Sulfate

10043-01-3

less than 5%

\*\*\*\*\*\*\*\*\*

SECTION III - PHYSICAL DATA

\*\*\*\*\*\*\*\*\*

Appearance and Odor: Wet, tan, granular mixture, odorless



A Member of The Didier Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

\*\*\*\*\*\*\*

SECTION IV - FIRE AND EXPLOSION HAZARD \*\*\*\*\*\*\*\*\*\*

Flammability: This product is non-flammable and will not support combustion.

在李本本年本中本中本本本本本本本本本

SECTION V - HEALTH HAZARD

\*\*\*\*\*\*\*\*\*\*\*

Threshold Limit Value:

For respirable dust containing crystalline silica:

OSHA :

ACGIH: Quartz.....0.1mg/m3

Cristobalite....0.05mg/m3 Tridymite.....0.05mg/m3

Effects of Overexposure:

CRYSTALLINE SILICA:

Chronic overexposure to dust containing respirable sized crystalline silica (quartz, cristobalite, and tridymite) can cause delayed lung injury (silicosis).

Points of attack: Respiratory system and lungs.

Route of entry: Inhalation.

Inhalation of dust containing crystalline silica may contribute to pre-existing pulmonary diseases such as asthma and lung disorders associated with the smoking of tobacco.

Some recent animal studies have caused the International Agency for Research on Cancer (IARC) to categorize crystalline silica as a 2A carcinogen. A 2A carcinogen is one which:

- (1) there is sufficient evidence for the carcinogenicity to experimental animals.
- (2) there is limited evidence of the carcinogenicity to humans.

Crystalline silica has been listed in the most recent NTP Report on Carcinogens.

For more information on crystalline silica refer to:

- (1) IARC Monograph, Volume 42
- (2) NIOSH Document No. 75-120
- (3) NTP Report on Carcinogens

Toxicity data:

Quartz:

LCLo: 300ug/m3 / 10Y-I

inhalation human

Cristobalite: TCLo: 16 mppcf/8H/17.9Y-I

inhalation human

Tridymite: TCLo: 16 mppcf/8H/17.9Y-I

inhalation human



A Member of The Didier Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

Note: LD50 and LC50 not available.

ALUMINUM SULPHATE:

The aluminum sulphate used in this product may cause irritation to the skin, eyes and lungs.

Toxicity data:

LD50: 6207 mg/kg (oral-mouse)

LD50: 270 mg/kg (intraperitoneal-mouse)

With the exception of: Crystalline silica

No ingredient in this product is found on either the Federal OSHA, NTP, or IARC list of

carcinogens.

Emergency and First Aid Data:

Skin: Wash thoroughly with soap and water.

Inhalation: Remove to fresh air.

Eyes: Flush with water for 15 minutes and get

medical help.

南南水南水水水水水水水水水水水水水

SECTION VI - REACTIVITY DATA

\*\*\*\*\*\*\*\*

Stability and Reactivity: This product is stable and non-reactive.

Hazardous Decomposition: May generate SO2 fumes.

Crystalline silica levels in used refractories may be higher or lower than as-shipped depending on service conditions. Hygiene monitoring must be done to insure the proper employee protection

during tearout.

市常本本本本本本本

SECTION VII - SPILL AND LEAK PROCEDURES

\*\*\*\*\*\*\*\*\*\*\*

Steps to be Taken in Case of a Spill:

Avoid generating dust exposure during cleanup.

Waste Disposal Method: Dispose of material according to local, state or federal regulations and as final used condition of

the product dictates.

\*\*\*\*\*\*\*\*\*\*\*\*

SECTION VIII - INDUSTRIAL HYGIENE INFORMATION \*\*\*\*\*\*

Ventilation: Local exhaust recommended to maintain exposures below TLV.

Respiratory Protection: NIOSH approved dust type for exposures above TLV.

Protective Gloves: Impervious gloves recommended.

Eye Protection: Recommended.

\*\*\*\*\*\*\*\*\*\*\*\*\*

SECTION IX - SPECIAL PRECAUTIONS

\*\*\*\*\*\*\*\*

Special Precautions: Avoid dust generation.

Precautionary Labeling: Product contains crystalline silica and

aluminum sulfate as a binder.

WARNING: Prolonged inhalation of product



A Member of The Didier Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

dust may cause delayed lung injury (silicosis). Contact may cause irritation to eyes and skin.

本本本本本本本本本本本本本本本

SECTION X - SPECIAL INFORMATION

\*\*\*\*\*\*\*\*\*

WARNING: Steam spalling may occur from improper drying, curing, and firing (heat-up). Steam spalling of thick refractory sections can be explosive in character. Potential for serious injury exists from failure to follow the recommended schedule. This schedule is available from North American Refractories Co. For more information, contact your sales representative or call North American Refractories Co. 216-621-5200.



500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

## NORTH AMERICAN REFRACTORIES PRODUCT SAPETY DATA SHEET

MANUFACTURER

MSDS # 5020-00

NORTH AMERICAN REFRACTORIES 500 HALLE BUILDING 1228 EUCLID AVENUE CLEVELAND, OHIO 44115-1809 Vendor:

Emergency Phone Number

U.S. (814) 234-7981 X250....D. Abrino

(314) 236-3890......K.Nelson

Canada (905) 639-8660.....D.Persaud

MSDS prepared by:

NORTH AMERICAN REFRACTORIES

Technical Center (314) 234-7981

Date Issued: 03/24/96

3/24/96 Date Revised: 03/07/96

Product Type: Refractory Plastic Or Ram Material

Trade Name: NARPHOS 85P

Product SARA Hazard Class: (1) Immediate or Acute (Irritant)

(2) Delayed or Chronic

WHMIS Hazard Class (CANADA): Class D - Division 2 - Sub Division A

Untested mixture containing a very toxic materia

SARA NOTICE: This product may contain a chemical(s) subject to

the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and Part 40 CFR

Part 372. For the name and amount of the subject chemical, see Section II - CHEMICAL COMPOSITION

of this Product Safety Data Sheet.

\*\*\*\*\*\*\*\*\*\*\* SECTION I - PRODUCT IDENTIFICATION \*\*\*\*\*\*\*\*\*\*

Chemical Name:

A1203, S102, H3P04

Chemical Family: Phos Bond High Alumina Refactories Plast

Hazardous Ingredients: CAS Number: PCT:

Crystalline Silica including: N/A

Quartz 14808-60-7 Cristobalite 14464-46-1

Tridymite 15468-32-3

Other Ingredients: CAS Number: PCT:

Hydrous Alumina Silicate 12141-46-7 1.0 - 5.0%

0.5 -

1.5%



A Member of The Didier Veitsch-Radex Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

Alumina (non-fibrous)	1344-28-1	10.0	-	30.0%
Alumina Silicate	1302-93-8	60.0	***	100.0%
**Phosphate acid binder(as P205)	7664-38-2	1.0	-	5.0%
Hydrous Alumina Silicate	1302-78-9	3.0	-	7.0%
Water (added)	7732-18-5	3.0	-	7.0%

\*\*Chemical(s) subject to Section 313 of Title III of the SuperFund Amendments and Reauthorization Act of 1986 and CFR Part 372

\*

Appearance and Odor: Gray, granular, wet mixture, odorless

Odor threshold (p.p.m.): Not applicable.

Specific Gravity: Not available.

Vapor Pressure (mm): Not applicable.

Vapor Density (air=1): Not applicable.

Boiling Point (\*F): Not available.

Sclubility in Water: Not available.

X Volatile (by weight): Not applicable.

pH: 2.5 to 5 range Density: Not available.

Coefficient of Water/Oil Distribution: Not applicable.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION IV - FIRE AND EXPLOSION HAZARD \*\*\*\*\*\*\*\*\*

Flammability: This product is non-flammable and will not support combustion.

Special fire fighting procedures: Use self-contained breathing apparatus.

Unusual Fire and Explosion Hazards:

Thermal decomposition products from phosphate binder may be hazardous and may contain irritating phosphoric oxide fumes.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION V - HEALTH HAZARD

Threshold Limit Value: Phosphoric Acid Mist 1 mg/m3

For respirable dust containing crystalline silica:

OSHA: For Respirable Dust:

10 divided by (% Quartz + 2)

expressed in mg/mJ.

ACGIH: Quartz.....0.1mg/m3

Cristobalite...0.05mg/m3 Tridymite.....0.05mg/m3

For all ingredients not listed above:

Effects of Overexposure:

Chronic exposure to dust could cause pulmonary

本本市本本本本本本本本本

# North American Refractories Co. A Member of The Didier Veitsch-Radex Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

problems.

#### CRYSTALLINE SILICA:

Chronic overexposure to dust containing respirable sized crystalline silica (quartz, cristobalite, and tridymite) can cause delayed lung injury (silicosis).

Points of attack: Respiratory system and lungs.

Route of entry: Inhalation.
Inhalation of dust containing crystalline silica may contribute to pre-existing pulmonary diseases such as asthma and lung disorders associated with the smoking of tobacco.

Some recent animal studies have caused the International Agency for Research on Cancer (IARC) to categorize crystalline silica as a 2A carcinogen. A 2A carcinogen is one which:

- there is sufficient evidence for the carcinogenicity to experimental animals.
- (2) there is limited evidence of the carcinogenicity to humans.

Crystalline silica has been listed in the most recent NTP Report on Carcinogens.

For more information on crystalline silica refer to:

- (1) IARC Monograph, Volume 42
- (2) NIOSH Document No. 75-120
- (3) NTP Report on Carcinogens

Toxicity data:

Quartz: LCLo: 300ug/m3 / 10Y-I

inhalation human

Cristobalite: TCLo: 16 mppcf/8H/17.9Y-I

inhalation human

Tridymite: TCLo: 16 mppcf/8H/17.9Y-I

inhalation human

Note: LD50 and LC50 not available.

#### PHOSPHATE BINDER:

Phosphate binder may irritate skin and eyes. PHOSPHATE ACID BINDER

The toxicology data listed below pertain to the concentrated form of the binder. Since the binder is diluted with water ion this product, effects are expected to be reduced.

TOXICITY:

ORAL RAT LD50 ...... 1530 mg/kg body weight DERMAL RABBIT LD50 ..... 2740 mg/kg body weight



A Member of The Didier Veitsch-Radex Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

EYE CONTACT--CORROSIVE--MAY CAUSE BURNS SKIN CONTACT--SEVERE IRRITANT--MAY CAUSE BURNS INHALATION--SEVERE IRRITANT INGESTION--burns to mouth, throat, and stomach

Chronic Effects: None identified.

CARCINOGENICITY INFORMATION
With the exception of:
Crystalline silica
No ingredient in this product is found on either
the Federal OSHA, NTP, or IARC list of
carcinogens.

Emergency and First Aid Data:

EYE CONTACT: Immediately flush with large amounts of water for at least 15 minutes.

SEEK MEDICAL AID.

SKIN CONTACT: Wash thoroughly with soap and water
If irritation persists, SEEK MEDICAL

INHALATION: Remove to fresh air. If breathing has stopped or is difficult, administer artificial respiration or oxygen as

indicated. SEEK MEDICAL AID.
INGESTION: DO NOT INDUCE VOMITING! If victim is

conscious give water, milk or milk of

magnesia. SEEK MEDICAL AID.

\*\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION VI - REACTIVITY DATA

水水水水水水水水水水水

Stability and Reactivity: This product is stable and non-reactive.

Hazardous Decomposition: Emits toxic fumes of phosphorus when heated.

Crystalline silica levels in used refractories may be higher or lower than as-shipped depending on service conditions. Hygiene monitoring should be done to insure the proper employee protection during tearout.

Acidic binder may react with metals to form hydrogen gas.

\*\*\*\*\*\*\* SECTION VII - SPILL AND LEAK PROCEDURES \*\*\*\*

亦亦亦亦亦亦亦亦亦亦亦亦亦亦亦

Steps to be Taken in Case of a Spill:

Avoid generating dust exposure when materials are dried.

Waste Disposal Method: Dispose of material according to local, state or federal regulations and as final used condition of the product dictates.



A Member of The Didier Veitsch-Radex Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

\*\*\*\*

SECTION VIII - INDUSTRIAL HYGIENE INFORMATION \*\*\*\*\*\*

Ventilation: Sufficient ventilation should be used to insure exposures below the TLV/PEL.

Respiratory Protection: NIOSH approved dust type for exposures above TLV. Protective Clothing and/or Barrier Creams:

As required, industrial resistant flexible-type gloves (rubber, neoprene, PVC, or equal). Wear industrial-type work clothing and safety footwear. Depending on working conditions, i.e., contact potential, wear resistant protective garments, such as aprons, jackets, pants, coveralls, boots,

Protective Gloves: Impervious gloves recommended.

Eye Protection: Industrial safety glasses, minimum. When needed for 29 CFR 1910.133 (work area conditions), use side shields, goggles and/or faceshield. Chemical goggles. Face shield (if splashing is possible).

非常非常非常非常的

SECTION IX - SPECIAL PRECAUTIONS

东南南南南南南南南南南

Special Precautions: Avoid dust generation.

Dust created during demolition of used product may

contain crystalline silica.

If applied to a hot surface, sufficient

ventilation to maintain exposures below the PEL

or respiratory protection is needed.

Avoid prolonged skin contact.

**南班南班市水水市水市市市市市市市市** 

SECTION X - SPECIAL INFORMATION

\*\*\*\*\*\*\*\*\*\*

WARNING: Steam spalling may occur from improper drying, curing, and firing (heat-up). Steam spalling of thick refractory sections can be explosive in character. Potential for serious injury exists from failure to follow the recommended schedule. This schedule is available from North American Refractories Co. For more information, contact your sales representative or call North American Refractories Co. 216-621-5200.



500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

## NORTH AMERICAN REFRACTORIES PRODUCT SAFETY DATA SHEET

MANUFACTURER

MSDS # 3044-00

NORTH AMERICAN REFRACTORIES 500 HALLE BUILDING 1226 EUCLID AVENUE CLEVELAND, OHIO 44115-1809

Vendor:

Emergency Phone Number

U.S. (814) 234-7981 X250....D. Abrino

(814) 236-3890......K.Nelson

Canada (905) 639-8660.....D.Persaud

MSDS prepared by:

NORTH AMERICAN REFRACTORIES

Technical Center (814) 234-7981

Date Issued: 08/11/96

Date Revised: 05/02/96

Product Type: Refractory Castable / Gun Material

Trade Name: REFRACRETE ESC

\*\*\*\*\* SECTION I - PRODUCT IDENTIFICATION

水水水水水水水水水水水水水

Chemical Name: Fireclay Castable

Chemical Family: A1203, SiO2, CaO

\*\*\*\*\*\*\*\*\* SECTION II - CHEMICAL COMPOSITION

\*\*\*\*\*\*\*\*

10.0 - 30.0%

Hazardous Ingredients:

CAS Number:

PCT:

Crystalline Silica including: N/A

14808-60-7 Quartz Cristobalite 14464-46-1 Tridymite 15468-32-3

Other Ingredients:

CAS Number:

PCT:

Alumina Silicate 1302-93-8 50.0 - 70.0% Hydrous Alumina Silicate 1302-87-0 3.0 -7.0% 30.0% Hydraulic Setting Cement 12042-68-1 10.0 -

\*\*\*\*\*\*\*

SECTION III - PHYSICAL DATA

\*\*\*\*\*\*\*\*\*

Appearance and Odor: Tan, granular, dry mixture, odorless.

A Member of The Didier Veitsch-Radex Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

\*\*\*\*\*\*\*\*\*

SECTION IV - FIRE AND EXPLOSION HAZARD \*\*\*\*\*\*\*\*\*

Flammability: This product is non-flammable and will not support

combustion.

\*\*\*\*\*\*\*

SECTION V - HEALTH HAZARD

\*\*\*\*\*\*\*

Threshold Limit Value:

For respirable dust containing crystalline silica:

OSHA: For Respirable Dust:

10 divided by (% Quartz + 2)

expressed in mg/m3.

ACGIH: Quartz.....0.1mg/m3

Cristobalite...0.05mg/m3 Tridymite.....0.05mg/m3

Effects of Overexposure:

CEMENT:

Cement may cause irritation to skin and eyes. Low toxicity via inhalation route. Pulmonary fibrosis due to cement dust occurs rarely if at Cement may be an allergen in some people. Note: LDS0 and LCS0 is not available for "Cement"

#### CRYSTALLINE SILICA:

Chronic overexposure to dust containing respirable sized crystalline silica (quartz, cristobalite, and tridymite) can cause delayed lung injury (silicosis).

Points of attack: Respiratory system and lungs.

Route of entry: Inhalation. Inhalation of dust containing crystalline silica may contribute to pre-existing pulmonary diseases such as asthma and lung disorders associated with the smoking of tobacco.

Some recent animal studies have caused the International Agency for Research on Cancer (IARC) to categorize crystalline silica as a 2A carcinogen. A 2A carcinogen is one which:

- (1) there is sufficient evidence for the carcinogenicity to experimental animals.
- (2) there is limited evidence of the carcinogenicity to humans.

Crystalline silica has been listed in the most recent NTP Report on Carcinogens.

For more information on crystalline silica refer to:

North American Refractories Co. A Member of The Didier Veitsch-Radex Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

(1) IARC Monograph, Volume 42

(2) NIOSH Document No. 75-120

(3) NTP Report on Carcinogens

Toxicity data:

Quartz:

LCLo: 300ug/m3 / 10Y-I

inhalation human

Cristobalite: TCLo: 16 mppcf/8H/17.9Y-I

inhalation human

Tridymite:

TCLo: 16 mppcf/8H/17.9Y-I

inhalation human

Note: LD50 and LC50 not available.

With the exception of: Crystalline silica

No ingredient in this product is found on either

the Federal OSHA, NTP, or IARC list of

carcinogens.

Emergency and First Aid Data:

Eyes: Flush with water and get medical help.

Inhalation: Remove to fresh air.

Eyes: Flush with water for 15 minutes and get

medical help.

\*\*\*\*\*\*\*

SECTION VI - REACTIVITY DATA

\*\*\*\*\*\*\*\*\*\*

Stability and Reactivity: This product is stable and non-reactive.

Hazardous Decomposition: Crystalline silica levels in used refractories may be higher or lower than as-shipped depending

on service conditions. Hygiene monitoring should be done to insure the proper employee protection

during tearout.

\*\*\*\*\*

SECTION VII - SPILL AND LEAK PROCEDURES

\*\*\*\*\*\*\*\*\*\*\*

Steps to be Taken in Case of a Spill:

Avoid generating dust exposure during cleanup.

Waste Disposal Method: Dispose of material according to local, state or

federal regulations and as final used condition of

the product dictates.

**水面水水面水在水水水水水水水水水水** 

SECTION VIII - INDUSTRIAL HYGIENE INFORMATION \*\*\*\*\*\*

Ventilation: Sufficient ventilation should be used to insure

exposures below the TLV/PEL.

Respiratory Protection: NIOSH approved dust type for exposures above TLV.

Protective Gloves: Impervious gloves recommended.

Eye Protection: Recommended.



500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

\*\*\*\*\*\*\*\*\*

SECTION IX - SPECIAL PRECAUTIONS

\*\*\*\*\*\*\*\*

Special Precautions: Avoid dust generation.

Precautionary Labeling: Product contains crystalline silica and

hydraulic setting cement.

WARNING: Prolonged inhalation of product

dust may cause delayed lung injury (silicosis). Contact may cause irritation to eyes and skin.

\*\*\*\*\*\*\*\*

SECTION X - SPECIAL INFORMATION

\*\*\*\*\*\*\*

WARNING: Steam spalling may occur from improper drying, curing, and firing (heat-up). Steam spalling of thick refractory sections can be explosive in character. Potential for serious injury exists from failure to follow the recommended schedule. This schedule is available from North American Refractories Co. For more information, contact your sales representative or call North American Refractories Co. 216-621-5200.



A Member of The Didier Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

## NORTH AMERICAN REFRACTORIES PRODUCT SAFETY DATA SHEET

MANUFACTURER

MSDS # 3044-00

NORTH AMERICAN REFRACTORIES 500 HALLE BUILDING 1228 EUCLID AVENUE CLEVELAND, OHIO 44115-1809

Vendor:

Emergency Phone Number

U.S. (814) 234-7981 X250....D.Abrino

(814) 236-3890.....K.Nelson

Canada (905) 639-8660..... D. Persaud

MSDS prepared by:

NORTH AMERICAN REFRACTORIES

Technical Center (814) 234-7981

Date Issued: 07/23/95

Date Revised: 08/27/91

Product Type: Refractory Castable / Gun Material

李李帝帝帝帝帝帝帝帝帝帝帝帝帝帝帝帝

Trade Name: REFRACRETE ES

SECTION I - PRODUCT IDENTIFICATION

南南南北南北南南南南南南南

Chemical Name: Fireclay Castable

Chemical Family: A1203, SiO2, CaO

\*\*\*\*\*\*\*\*\*\*\*

SECTION II - CHEMICAL COMPOSITION

\*\*\*\*\*\*\*\*\*

10.0 - 30.0%

Hazardous Ingredients:

CAS Number:

PCT:

Crystalline Silica including: N/A

Quartz

Cristobalite

Tridymite

14808-60-7 14464-46-1

15468-32-3

Other Ingredients:

CAS Number:

PCT:

Alumina Silicate

1302-93-8

10.0 -

Hydrous Alumina Silicate Hydraulic Setting Cement

1302-87-0 12042-68-1

50.0 - 70.0% 3.0 -7.0%

30.0%

\*\*\*\*\*\*\*\*\*\*\*

SECTION III - PHYSICAL DATA

本非常市市市市市市市市市市市市市市

Appearance and Odor: Tan, granular, dry mixture, odorless.

A Member of The Didier Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

SECTION IV - FIRE AND EXPLOSION MAZARD \*\*\*\*\*\*\*\*\*\*

Flammability: This product is non-flammable and will not support combustion.

\*\*\*\*\*\*

SECTION V - HEALTH HAZARD

非安安安全安全安全

Threshold Limit Value:

For respirable dust containing crystalline silica:

OSHA: For Respirable Dust:

10 divided by (% Quartz + 2)

expressed in mg/m3.

ACGIH: Quartz..........0.1mg/m3

Cristobalite...0.05mg/m3 Tridymite....0.05mg/m3

Effects of Overexposure:

#### CEMENT:

Cement may cause irritation to skin and eyes.
Low toxicity via inhalation route. Pulmonary
fibrosis due to cement dust occurs rarely if at
all. Cement may be an allergen in some people.
Note: LD50 and LC50 is not available for "Cement"

#### CRYSTALLINE SILICA:

Chronic overexposure to dust containing respirable sized crystalline silica (quartz, cristobalite, and tridymite) can cause delayed lung injury (silicosis).

Points of attack: Respiratory system and lungs.

Route of entry: Inhalation.

Inhalation of dust containing crystalline silica may contribute to pre-existing pulmonary diseases such as asthma and lung disorders associated with the smoking of tobacco.

Some recent animal studies have caused the International Agency for Research on Cancer (IARC) to categorize crystalline silica as a 2A carcinogen. A 2A carcinogen is one which:

- there is sufficient evidence for the carcinogenicity to experimental animals.
- (2) there is limited evidence of the carcinogenicity to humans.

Crystalline Silica has been listed in the most recent NTP Report on Carcinogens.

For more information on crystalline silica refer to:



A Member of The Didier Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

- (1) IARC Monograph, Volume 42
- (2) NIOSH Document No. 75-120
- (3) NTP Report on Carcinogens

Toxicity data:

Quartz:

LCLo: 300ug/m3 / 10Y-I

inhalation human

Cristobalite: TCLo: 16 mppcf/3H/17.9Y-I

inhalation human

Tridymite:

TCLo: 16 mppcf/8H/17.9Y-I

inhalation human

Note: LD50 and LC50 not available.

With the exception of: Crystalline silica

No ingredient in this product is found on either

the Federal OSHA, NTP, or IARC list of

carcinogens.

Emergency and First Aid Data:

Eyes: Flush with water and get medical help.

Inhalation: Remove to fresh air.

Eyes: Flush with water for 15 minutes and get

medical help.

**水水水水油水水水水水水水水水水水水** 

SECTION VI - REACTIVITY DATA

\*\*\*\*\*\*\*\*\*

Stability and Reactivity: This product is stable and non-reactive. Hazardous Decomposition: Crystalline silica levels in used refractories

may be higher or lower than as-shipped depending on service conditions. Hygiene monitoring should be done to insure the proper employee protection

during tearout.

水水水塘水溶布水水 SECTION VII - SPILL AND LEAK PROCEDURES \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Steps to be Taken in Case of a Spill:

Avoid generating dust exposure during cleanup.

Waste Disposal Method: Dispose of material according to local, state or

federal regulations and as final used condition of

the product dictates.

SECTION VIII - INDUSTRIAL HYGIENE INFORMATION \*\*\*\*\*

Ventilation: Sufficient ventilation should be used to insure

exposures below the TLV/PEL.

Respiratory Protection: NIOSH approved dust type for exposures above TLV.

Protective Gloves: Impervious gloves recommended.

Eye Protection: Recommended.



A Member of The Didier Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

本本電影亦作本本水學教育

SECTION IX - SPECIAL PRECAUTIONS

非本水水水水水水水水水水

Special Precautions: Avoid dust generation.

Precautionary Labeling: Product contains crystalline silica and

hydraulic setting cement.

WARNING: Prolonged inhalation of product

dust may cause delayed lung injury (silicosis). Contact may cause irritation to eyes and skin.

**华华华本本本本本本本本本本本本本本本本** 

SECTION X - SPECIAL INFORMATION

李安本帝帝帝帝帝帝帝帝帝

WARNING: Steam spalling may occur from improper drying, curing, and firing (heat-up). Steam spalling of thick refractory sections can be explosive in character. Potential for serious injury exists from failure to follow the recommended schedule. This schedule is available from North American Refractories Co. For more information, contact your sales representative or call North American Refractories Co. 216-621-5200.

GREENPAK-85-P R-7011

This product contains phosphoric acid, CAS No. 7664-38-2, which is reportable under Section 313 of Title III of SARA and 40 CFR Part 372. For purposes of reporting environmental discharge use 6% phosphoric acid content.

#### GREENPAK-83-MP

This product contains phosphoric acid, CAS No. 7664-38-2, which is reportable under Section 313 of Title III of SARA and 40 CFR Part 372. For purposes of reporting environmental discharge use 6% phosphoric acid content.

#### GREENPAK-85-PF

This product contains phosphoric acid, CAS No. 7664-38-2, which is reportable under Section 313 of Title III of SARA and 40 CFR Part 372. For purposes of reporting environmental discharge use 6% phosphoric acid content.

## GREENGUN-83 P

This product contains phosphoric acid, CAS No. 7664-38-2, which is reportable under Section 313 of Title III of SARA and 40 CFR Part 372. For purposes of reporting environmental discharge use 6% phosphoric acid content.

MEXICO, MISSOURI 65265 U.S.A.

October 30, 1989

#### MATERIAL SAFETY DATA SHEET

A.P. Green Industries, Inc. Green Boulevard, Mexico, Missouri 65265 Telephone -- 314-473-3626

## SECTION I

PRODUCT	GREENPAK-85-P	GREENPAK-85-P GR	Plus GREENGUN-85 P
NAME:	GREENPAK-85-PF	R-2010	GREENGUN-85 P Plus
	GREENPAK-85-P Plus	R-2010 Plus	CA-3012
	GREENPAK-85-PF Plus	R-2010 GR	GREENPAK-83-MP
	GREENPAK-85-P GR	R-2010 GR Plus	GREENPAK-83-MP Plus
	R-7011	GREENGUN-83 P	GREENGUN-83 P Plus GREENPAK-83-MP-S
	R-7011 Plus	PLASTIC MIX 390	
			GREENPAK-83-MP-S Plus

PRODUCT TYPE: Plastic Refractory

CHEMICAL FAMILY:  $SiO_2 = 6-14\%$ ,  $Al_2O_3 = 82-90\%$  FORMULA: Not  $Fe_2O_3 = 1-2\%$ ,  $TiO_2 = 2-3\%$  Applicable NaKO = <1%

Note: The above listed products differ in one or more physical characteristics but are chemically equivalent. Information given in SECTIONS II and IX of this Material Safety Data Sheet applies to each product listed.

## SECTION II

#### PRODUCT HAZARDOUS INGREDIENTS

Chemical	TLV-TWA	CAS #
Quartz (SiO <sub>2</sub> ) (<1%)	0.1 mg/m <sup>3</sup> * Respirable Dust	14808-60-7
Cristobalite (SiO <sub>2</sub> ) (<10%)	0.05 mg/m <sup>3</sup> * Respirable Dust	14464-46-1
Phosphoric Acid (H <sub>2</sub> O <sub>3</sub> ) (<15%)	1 mg/m <sup>3*</sup> Respirable Dust	7664-38-2
Alumina (Al <sub>2</sub> O <sub>3</sub> ) (<30%)	10 mg/m <sup>3*</sup> Total Dust	1344-28-1

\* Source: American Conference of Governmental Industrial Hygienists, 1989-1990.

#### SECTION III

#### PHYSICAL DATA

SOLUBILITY IN WATER: Slight

SPECIFIC GRAVITY: 3.0-3.2

MELTING POINT: Not

Applicable

### SECTION IV

#### FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: None

EXTINGUISHING MEDIA: Not Combustible.

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: The phosphoric acid if heated to decomposition will emit toxic fumes of PO.

#### SECTION V

### HEALTH HAZARD DATA

#### EFFECT OF OVEREXPOSURE:

EYES ACUTE: Dust or aggregate particles can cause mechanical

irritation. Phosphoric acid may cause eye injury.

CHRONIC: None known.

SKIN ACUTE: Can cause mechanical abrasion. Phosphoric acid

can cause skin injury.

CHRONIC: None known.

INHALATION ACUTE: Dust, if present, may cause upper respiratory

irritation.

CHRONIC: Dust may cause lung damage if inhaled on a long-

term basis.

INGESTION ACUTE: Unknown.

CHRONIC: Unknown.

Material Safety Data Sheet Product: GREENPAK-85-P (etc.)

#### EMERGENCY AND FIRST AID PROCEDURES:

EYES Immediately flush eyes with water for 15 minutes. Consult

physician if irritation occurs.

SKIN Wash with soap and water. Treat abrasions using normal

first aid procedures.

INHALATION Remove to fresh air. Seek medical attention.

INGESTION Contact physician immediately. Do not induce vomiting

unless instructed to do so by a physician.

#### SECTION VI

# REACTIVITY DATA

STABILITY: Stable

INCOMPATIBILITY: None Known

HAZARDOUS POLYMERIZATION: Will Not Occur

#### SECTION VII

#### SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Sweep, shovel up, or pick up.

WASTE DISPOSAL METHOD: May be disposed of in an approved landfill, in accordance with local, state, and federal regulations.

Material Safety Data Sheet Product: GREENPAK-85-P (etc.)

#### SECTION VIII

#### SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Use NIOSH approved respirator when working around dried material or when removing this product after service.

<u>VENTILATION</u>: General mechanical ventilation is adequate.

EYE PROTECTION: Goggles or safety glasses with side shields should be worn.

OTHER PROTECTION: Use of leather gloves and long-sleeved and long-legged clothing protects hands, arms, and legs from skin contact or abrasion. Safety shoes should be worn to protect feet from accidentally dropped blocks of plastic.

#### SECTION IX

#### SPECIAL PRECAUTIONS

Since this product contains phosphoric acid, toxic POx fumes can be formed on burn in.

<u>WARNING</u>: This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as a Class 2A carcinogen. Their study concluded that sufficient evidence for carcinogenicity exists in experimental animals and that limited evidence for carcinogenicity exists in humans.

NIOSH approved respirators should be worn any time that refractories are torn out after service. While some respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be, whether originating with A.P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: E

Ellis J. Smith

Title:

Senior Technical Consultant

Phone:

(314) 473-3392

April 26, 1988

# A. P. GREEN INDUSTRIES, INC.

MEXICO, MISSOURI 65265 U.S.A.

# MATERIAL SAFETY DATA SHEET

A. P. Green Industries, Inc. Green Boulevard, Mexico, Missouri 65265 Telephone Number -- 314-473-3626

#### SECTION I

PRODUCT NAMES:

SUPER HYBOND

SUPER HYBOND GR

SUPER HYPOND Plus

SUPER HYBOND GR Plus

SUPER HYBOND J

GREENGUN-45

SUPER HYBOND J Plus

GREENGUN-45 Plus

SUPER BOND (Canada)

PRODUCT TYPE:

Plastic Refractory

CHEMICAL FAMILY: SiO<sub>2</sub> = 48-51%, Al<sub>2</sub>O<sub>3</sub> = 43-46% FORMULA: Not Applicable NaRO  $_{3}$  = 1%, TiO<sub>2</sub> = 1-3%

NOTE: The above listed products differ in one or more physical characteristics but are chemically equivalent. Information given in SECTIONS II through IX of this Material Safety Data Sheet applies to each product listed.

# SECTION II

# PRODUCT HAZARDOUS INGREDIENTS

Chemical	TLV-TWA	CAS #
Quartz (SiO <sub>2</sub> )	0.1 mg/m <sup>3</sup> *	14808-60-7
(1-4%)	Respirable Dust	
Cristobalite (SiO,)	0.05 mg/m <sup>3</sup> +	14464-46-1
(3-12%)	Respirable Dust	
Aluminum Sulfate	2 mg/m <sup>3</sup> *	10043-01-3
(<5%)		
Glass Cullet	(None)	(None)
(powdered glass)		
(<5%)		

<sup>\*</sup> Source: American Conference of Governmental Industrial Hygienists, 1.987-1988.

# SECTION III

#### PHYSICAL DATA

SOLUBILITY IN WATER: Slight

SPECIFIC GRAVITY: 2.6

MELTING POINT: Not Applicable

Material Safety Data Sheet Product: SUPER HYBOND April 26, 1988 Page 2

#### SECTION IV

# FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: None

EXTINGUISHING MEDIA: Not Combustible.

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: The aluminum sulfate present if heated to decomposition will emit toxic fumes of SO.

#### SECTION V

#### HEALTH HAZARD DATA

#### EFFECT OF OVEREXPOSURE:

EYES ACUTE: Dust or aggregate particles can cause mechanical

irritation. Aluminum sulfate may cause eye damage.

CHRONIC: None known.

SKIN ACUTE: Can cause mechanical abrasion. Aluminum sulfate

may cause skin injury.

CHRONIC: None known.

INHALATION ACUTE: Dust, if present, may cause upper respiratory

irritation.

CHRONIC: Dust may cause lung damage if inhaled on a long-

term basis.

INGESTION ACUTE: Unknown.

CHEONIC: Unknown.

#### EMERGENCY AND FIRST AID PROCEDURES:

EYES Immediately flush eyes with water for 15 minutes. Consult

physician if irritation persists.

SKIN Wash with soap and water. Treat abrasions using normal first

aid procedures.

INHALATION Remove to fresh air. Seek medical attention.

INGESTION Contact physician immediately. Do not induce vomiting unless

instructed to do so by physician.

Material Safety Data Sheet
Product: SUPER HYBOND

April 26, 19-Page 3

#### SECTION VI

# REACTIVITY DATA

STABILITY: Stable

INCOMPATIBILITY: None Known

HAZARDOUS POLYMERIZATION: Will Not Occur

#### SECTION VII

#### SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Sweep, shovel up, or pick up.

WASTE DISPOSAL METHOD: May be disposed of in an approved landfill, in accordance with local, state, and federal regulations.

# SECTION VIII

#### SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Use NIOSH approved respirator when working around dried material or when removing this product after service.

VENTILATION: General mechanical ventilation is adequate.

EYE PROTECTION: Goggles or safety glasses with side shields should be worn.

OTHER PROTECTION: Use of leather gloves and long-sleeved and long-legged clothing protects hands, arms, and legs from skin contact or abrasion. Safety shoes should be worn to protect feet from accidentally dropped blocks of plastic.

Material Safety Data Sheet Product: SUPER HYBOND April 26, 1998 Page 4

#### SECTION IX

# SPECIAL PRECAUTIONS

WARNING: This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as a Class 2A carcinogen. Their study concluded that sufficient evidence for carcinogenicity exists in experimental animals and that limited evidence for carcinogenicity exists in humans.

Since this product contains aluminum sulfate, toxic  $SO_{\mathbf{x}}$  fumes can be formed on burn in.

NIOSH approved respirators should be worn any time that refractories are torm out after service. While some respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith

Title: Senior Technical Consultant

Phone: (314) 473-3392

A. P. GREEN INDUSTRIES, INC. GREEN BOULEVARD, MEXICO, MO. 65265 TELEPHONE NUMBER -- 314-473-3626

#### SECTION I

PRODUCT NAME:

SUPER G SUPER G Plus SUPER G J SUPER G J Plus SUPER-G-CC (Canada)

PRODUCT TYPE:

Plastic Refractory

CHEMICAL FAMILY:

Si0<sub>2</sub> = 43-46% Al<sub>2</sub>0<sub>3</sub> = 49-52% Fe<sub>2</sub>0<sub>3</sub> = 1-3% Ti0<sub>2</sub> = 1-3% Nago = 1%

FORMULA: Not applicable

SECTION II

PRODUCT HAZARDOUS INGREDIENTS

CHEMICAL

TLV-TWA

CAS #

Quartz (Si0 2)

(1-4%)

0.1 mg/m 3 \*

14808-60-7

Respirable Dust

Cristobalite (Si02)

0.05 mg/m 3 \*

14464-46-1

(3-10%)

Respirable Dust

\*Source: American Conference of Governmental Industrial Hygienists, 1993-1994.

SECTION III

PHYSICAL DATA

SCLUBILITY IN WATER: Slight

SPECIFIC GRAVITY:

2.6

MELTING POINT: Not Applicable

APPEARANCE AND ODOR: Buff to gray granular solid; no odor

SECTION IV

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: None

EXTINGUISHING MEDIA: Not Combustible

SPECIAL FIRE FIGHTING PROCEDURES:

None Known.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V

HEALTH HAZARD DATA

EFFECT OF OVEREXPOSURE:

EYES

ACUTE: Dust or aggregate particles can cause mechanical irritation.

CHRONIC: None known.

SKIN

ACUTE: Can cause mechanical abrasion.

CHRONIC: None known.

INHALATION

ACUTE: Dust, if present, may cause upper respiratory irritation.

CHRONIC: Dust may cause lung damage if inhaled on a long-term basis.

INCESTION

ACUTE: Unknown.

CHRONIC: Unknown.

Material Safety Data Sheet Product: SUPER G, etc.

SECTION V (CONTINUED)

EMERGENCY AND FIRST AID PROCEDURES:

EYES Immediately flush eyes with water for 15 minutes. Consult physician if irritation

persists

SKIN Treat abrasions using normal first aid procedures.

INHALATION Remove to fresh air. Seek medical attention.

INGESTION Contact physician immediately. Do not induce vomiting unless instructed to do so by

physician.

SECTION VI REACTIVITY DATA

STABILITY:

Stable

INCOMPATIBILITY:

None known.

HAZARDOUS POLYMERIZATION:

Will not occur.

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Sweep, shovel up, or pick up.

WASTE DISPOSAL METHOD: May be disposed of in an approved landfill, in accordance with local, state, and federal regulations.

SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Use NIOSH approved respirator when working around dried material or when removing this product after service.

VENTILATION:

General mechanical ventilation is adequate.

EYE PROTECTION: Goggles or safety glasses with side shields should be worn.

OTHER PROTECTION: Use of leather gloves and long-sleeved and long-legged clothing protects hands, arms, and legs from skin contact or abrasion. Safety shoes should be worn to protect feet from accidentally dropped blocks of plastic.

SECTION IX

SPECIAL PRECAUTIONS

Warning: This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as a Class 2A carcinogen. Their study concluded that sufficient evidence for carcinogenicity exists in experimental animals and that limited evidence for carcinogenicity exists in humans.

NICSH approved respirators should be worn any time that refractories are torn out after service. While some respiratory hazard and or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in Section II - HAZARDOUS INGREDIENTS section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith

Title: Senior Technical Consultant

Phone: (314) 473-3392



# North American Refractories Co.

A Member of The Didier Veitsch-Radex Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

# NORTH AMERICAN REFRACTORIES PRODUCT SAFETY DATA SHEET

MANUFACTURER

MSDS # 1024-00

NORTH AMERICAN REFRACTORIES 500 HALLE BUILDING 1228 EUCLID AVENUE CLEVELAND, OHIO 44115-1809

Vendor:

Emergancy Phone Number U.S (914) 234-7981 X250...D.Abrino (914) 236-3890.....K.Nelson Canada (908) 639-8660....D.Persaud

MSDS prepared by: NORTH AMERICAN REFRACTORIES Technical Center (814) 234-7981

Date [ssued: 01/12/97

Date Revised: 03/06/96

Product Type: Refractory Brick Shape - Alumina Silica Trade Name: DIABLO D

Product SARA Hazard Class: (2) Delayed or Chronic WHM18 Hazard Class (CANADA): Class D - Division 2 - Sub Division A Untested mixture containing a very toxic mate

\*\*\*\*\*\* SECTION I - PRODUCT IDENTIFICATION

水水水水水水水水水水水水

Chemical Name: Fireclay Brick Chemical Family: Al203, SiO2

Cristobalite

Tridymite

在京原作用其中中中中中北京東京本京

SECTION II - CHEMICAL COMPOSITION

**泰基来来求专业事业集中的** 

10.0 - 30.00

Hazardous Ingredients:

CAS Number:

PCT:

Crystalline Silica including: N/A

Quartz

14808-60-7 14464-46-1 15468-32-3

Orner Ingredients:

CAS Number

PCT

Alumina Silicate

1302-93-8

60.0 - 100.0%

宋 作及 日 日 五 京 生 民 等 史 李 生 宋 宋 奉 縣 森 森

SECTION III - PHYSICAL DATA

\*\*\*\*\*\*\*\*\*\*\*\*

Appearance and Odor: Tan brick shapes, odorless Odor threshold (p.p.m.): Not applicable Specific Gravity: Not available. Wapor Pressure (mm): Not applicable Vapor Density (air=1): Not applicable



# North American Refractories Co.

A Member of The Didier Veitsch-Radex Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

Boiling Point (°F): Greater than 1000 Deg.F. Solubility in Water: Nil. Nolatile (by weight): None. pm: S to 9 range Density: 2 to 3 gm/cc. Coefficient of Water/Oil Distribution: Not applicable

Flammability: This product is non-flammable and will not support combustion.

北洋大工作区出土自由海水出水水水水水水 SECTION V - HEALTH HAZARD 体表示本本本文字本本文字子

Threshold Limit Value:

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

For respirable dust containing crystalline silica: OSHA: For Respirable Dust: 10 divided by (% Quartz + 2) expressed in mg/m3.

Quartz ... 0.1mg/m3 Cristobalite 0.05mg/m3 Tridymite 0.5mg/m3 ACGIH: Quartz

Effects of Overexposure:

CRYSTALLINE SILICA: Chronic overexposure to dust containing respirable sized crystalline silica (quartz, cristobalite, and tridymite) can cause delayed lung injury (silicosis)

Points of attack. Respiratory system and lungs.

Route of entry: Inhalation.
Inhalation of dust containing crystalline silica may contribute to pre-existing pulmonary diseases such as asthma and lung disorders associated with the smoking of tobacco.

Some recent animal studies have caused the International Agency for Research on Cancer (IARC) to categorize crystalline silica as a 2A carcinogen. A 2A carcinogén le one which: (1) there is sufficient evidence for the

carcinogenicity to experimental animals

(2) there is limited evidence of the carcino-genicity to humans.
Crystalline silica has been listed in the most recent NTP Report on Carcinogens.

For more information on crystalline silica refer

(1) IARC Monograph, Volume 42



# North American Refractories Co.

A Member of The Didier Veitsch-Radex Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809

(2) NIOSH Document No. 75-120(216) 621-5200 (3) NTP Report on Carcinogens Toxicity data

Quartz:

LCLo: 300ug/m3 / 10Y-I inhalation human TCLo: 16 mppcf/8H/17.9Y-I inhalation human TCLo: 16 mppcf/8H/17.9Y-I

Cristobalite

Tridymite:

inhalation human

Note: LDE0 and LCE0 not available.

CARCINOGENICITY INFORMATION With the exception of: Crystalline silics

No ingredient in this product is found on either the Federal OSHA, NTF, or IARC list of carcinogens.

Emergency and First Aid Data: Inhalation: Remove to fresh air.

SECTION VI - REACTIVITY DATA

\*\*\*\*\*\*\*\*\*

Stability and Reactivity: This product is stable and non-reactive.

Hazardous Decomposition: Crystalline silica levels in used refractories may be higher or lower than as-shipped depending on service conditions. Hygiene monitoring should be done to insure the proper employee protection Hygiene monitoring should during tearout.

水田 法 巴 日 日 日 日 日 日 日

SECTION VII - SPILL AND LEAK PROCEDURES

本本者本本本本本本本本本本本本

Steps to be Taken in Case of a Spill:

Appld generating dust exposure during cleanup.
Wasta Disposal Method: Dispose of material according to local, state or federal regulations and as final used condition of the product dictates.

ひとのリニット 大工士 中水水市 半本水水

SECTION VIII - INDUSTRIAL HYGIENE INFORMATION +\*\*\*\*

Ventilation: Sufficient ventilation should be used to insure exposures below the TLV/PEL festimatory Protection: NIOSH approved dust type for exposures above TLV.

Eye Protection: Recommended.

生々ランニーストとラケヤを出来水水水

SECTION IX - SPECIAL PRECAUTIONS

水水水水水水水水水水水水

Special Precautions: Avoid dust generation

Precausionary Labeling: Product contains crystalline silica
WARNING: Prolonged/repeated inhalation of product
dust may cause delayed lung injury (silicosis)

# 9/15/92 MATERIAL SAFETY DATA SHEET

A. P. GREEN INDUSTRIES, INC. GREEN BOULEVARD, MEXICO, MO. 65265 TELEPHONE NUMBER -- 314-473-3626

Ι

PRODUCT NAME:	KS-4V	KS-4-EM (Canada)	SUPER KAST-SET
	KS-4V Plus	CA-2031 (Canada)	SUPER KAST-SET Plus
	KS-4V GR	R-8001	MAGNACAST 24 C
	KS-4V GR Plus	R-8001 Plus	MAGNACAST 24 C Plus
	MC-22	R-8002	MAGNACAST 26 C
	MC-22 Plus	R-8002 Plus	MAGNACAST 26 C Plus
	MC-25	CASTABLE MIX 247	MEGACAST-24C
	MC-25 Plus	CASTABLE MIX 247 Plus	MEGACAST-24C Plus
	MC-26	CASTABLE MIX 276	MEGACAST-26C
	MC-26 Plus	CASTABLE MIX 276 Plus	MEGACAST-26C Plus

PRODUCT TYPE:

Castable Refractory

CHEMICAL FAMILY:

SiO = 39-47% CaO = 4-12% Al<sub>2</sub>0<sub>3</sub> = 40-48% Fe<sub>2</sub>0<sub>3</sub> = 1-5% FORMULA: Not Applicable

NOTE: The above listed products differ in one or more physical characteristics but are chemically equivalent. Information given in Sections II through IX of this Material Safety Data Sheet applies to each product listed.

# SECTION II PRODUCT HAZARDOUS INGREDIENTS

CHEMICAL	TLV-TWA	CAS #
Cristobalite (SiO <sub>2</sub> )	0.05 mg/m 3 *	14464-46-1
(5-20%)	Respirable Dust	
Quartz (SiO2)	0.1 mg/m <sup>3</sup> *	14808-60-7
(<2%)	Respirable Dust	
Refractory Cement	(None) (See Section V)	65997-16-2

<sup>\*</sup>Source: American Conference of Governmental Industrial Hygienists, 1992-1993.

SECTION III PHYSICAL DATA

SOLUBILITY IN WATER:

Slight

VOLATILES BY VOLUME (%): Nil

SPECIFIC GRAVITY:

2.7 - 2.8

MELTING POINT: Not Applicable

APPEARANCE AND ODOR:

Gray to buff granular mixture; no odor

SECTION IV
FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:

None.

EXTINGUISHING MEDIA:

Material is non-flammable.

SPECIAL FIRE FIGHTING PROCEDURES:

None.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

None.

SECTION V HEALTH HAZARD DATA

EFFECT OF OVEREXPOSURE:

EYES:

ACUTE: Dust can irritate eyes. Product's cement can cause eye injury.

CHRONIC: Unknown.

SKIN:

ACUTE: Product's cement can cause skin irritation.

CHRONIC: Unknown.

INHALATION:

ACUTE: Dust generated can cause breathing discomfort. CHRONIC: Long-term exposure to dust may cause lung damage.

INGESTION:

ACUTE: Unknown.

CHRONIC: Unknown.

Material Safety Data Sheet Product: KS-4V (etc.)

SECTION V (CONTINUED)

EMERGENCY AND FIRST AID PROCEDURES:

EYES:

Flush with clean water for 15 minutes. If irritation occurs, consult physician.

SKIN:

Wash with soap and water. If irritation occurs, consult physician.

INHALATION:

Remove to fresh air. Seek medical attention.

INGESTION:

Contact physician immediately. Do not induce vomiting unless instructed to do so by physician. Product is non-toxic as supplied, but its abrasive nature could damage internal organs.

SECTION VI

REACTIVITY DATA

STABILITY:

Stable

INCOMPATIBILITY:

None known

HAZARDOUS POLYMERIZATION:

Will not occur

SECTION VII

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: If dry, predampen and sweep or shovel up. If wet (after mixing with water for use), sweep or shovel up.

WASTE DISPOSAL METHOD: In the as-supplied condition, product can be disposed of in an approved landfill, in accordance with local, state, and federal regulations.

SECTION VIII

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Use NIOSH approved respirator when working around dried material or when removing this product after service.

VENTILATION:

General mechanical ventilation is usually adequate.

EYE PROTECTION: Goggles or safety glasses with side shields should be worn.

OTHER PROTECTION: Gloves and long-sleeved and long-legged clothing should be worn to prevent skin contact. Safety shoes should be worn to prevent foot injury from accidentally dropped bags of castable.

SECTION IX

SPECIAL PRECAUTIONS

Warning: This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as a Class 2A carcinogen. Their study concluded that sufficient evidence for carcinogenicity exists in experimental animals and that limited evidence for carcinogenicity exists in humans.

NIOSE approved respirators should be worn any time that refractories are torn out after service. While some respiratory hazard and or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith

Title: Senior Technical Consultant

Phone: (314) 473-3392

#### MATERIAL SAFETY DATA SHEET

Date: 01/20/95

No. 2561 4731, 873

# A. P. GREEN INDUSTRIES, INC. GREEN BOULEVARD, MEXICO, MO. 65265 TELEPHONE NUMBER - 314-473-3626

#### SECTION I

PRODUCT NAME:

· CASTABLE INSULATION NO. 22

CASTABLE INSULATION NO. 22 Plus CASTABLE INSULATION NO. 22 GR Plus

CASTABLE INSULATION NO. 22 GR

GREENCAST-22-L GR

PRODUCT TYPE:

Castable Refractory

CHEMICAL FAMILY:

SiO<sub>2</sub> = 33-36% Ca0 = 18-20%

 $A1_20_3 = 36-39%$  $Fe_{9}0_{3} = 6-7%$ 

FORMULA: Not Applicable

The above listed products differ in one or more physical characteristics but are chemically equivalent. Information given in SECTIONS II through IX of this Material Safety Data Sheet applies to each product.

#### SECTION II

# PRODUCT HAZARDOUS INGREDIENTS

CHEMICAL

TLV-TWA

CAS #

Perlite

10 mg/m<sup>3\*</sup> Total Dust

93763-70-3

(15-25%)

14464-46-1

Cristobalite (SiO2) (5-10%)

0.05 mg/m<sup>3\*</sup> Respirable Dust

Quartz (SiO2)

0.1 mg/m<sup>3\*</sup>

14808-60-7

Respirable Dust

None (See Section V)

65997-16-2

Refractory Cement

(45-55%)

\* Source: American Conference of Governmental Industrial Hygienists, 1993-1994.

#### SECTION III

#### PHYSICAL DATA

SOLUBILITY IN WATER:

Slight

VOLATILES BY VOLUME (%): Nil

SPECIFIC GRAVITY:

0.7-0.9

MELTING POINT: Not Applicable

APPEARANCE AND ODOR:

Gray, granular mixture; no odor

#### SECTION IV

#### FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:

None

EXTINGUISHING MEDIA: Material is non-flammable.

SPECIAL FIRE FIGHTING PROCEDURES:

None

UNUSUAL FIRE AND EXPLOSION HAZARDS:

None .

\_\_\_\_\_\_\_

# SECTION V

#### HEALTH HAZARD DATA

#### EFFECT OF OVEREXPOSURE:

EYES:

ACUTE: Dust can irritate eyes. Product's cement can cause eye injury.

CHRONIC: Unknown.

SKIN:

ACUTE: Product's cement can cause skin irritation.

CHRONIC: Unknown.

INHALATION:

ACUTE: Dust generated can cause breathing discomfort.

CHRONIC: Dust may cause lung damage if inhaled on a long-term basis.

INGESTION:

ACUTE: Unknown.

CHRONIC: Unknown.

Material Safety Data Sheet

Product: CASTABLE INSULATION NO. 22, etc.

Section V (continued)

EMERGENCY AND FIRST AID PROCEDURES:

EYES: Flush eyes with clean water for 15 minutes. If irritation occurs, consult physician.

SKIN: Wash with soap and water. Consult physician if irritation occurs.

INHALATION: Remove to fresh air. Seek medical attention.

INGESTION: Contact physician immediately. Do not induce vomiting unless instructed to do so by a

physician. Product is non-toxic as supplied, but its abrasive nature could damage

internal organs.

SECTION VI REACTIVITY DATA

STABILITY:

Stable

INCOMPATIBILITY:

None known

HAZARDOUS POLYMERIZATION: Will not occur

Vivees 6

# SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: If dry, predampen and sweep or shovel up. If wet (after mixing with water for use), sweep or shovel up.

WASTE DISPOSAL METHOD: In the as-supplied condition, product may be disposed of in an approved landfill, in accordance with local, state, and federal regulations.

# SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Use NIOSH approved respirator when working around dried material or when removing this product after service.

VENTILATION: General mechanical ventilation is usually adequate.

EYE PROTECTION: Goggles or safety glasses with side shields should be worn.

OTHER PROTECTION: Gloves and long-sleeved and long-legged clothing protects hands, arms, and legs from skin contact or abrasion. Safety shoes should be worn to protect feet from accidentally dropped bags of castable.

# SECTION IX SPECIAL PRECAUTIONS

<u>Warning:</u> This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as a Class 2A carcinogen. Their study concluded that sufficient evidence for carcinogenicity exists in experimental animals and that limited evidence for carcinogenicity exists in humans.

NIOSH approved respirators should be worn any time that refractories are torn out after service. While some respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in Section II - HAZARDOUS INGREDIENTS section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith

Title: Senior Technical Consultant

Phone: (314) 473-3392

JH: MSDS\CURRENT\CI22.015

#### 1/7/93 MATERIAL SAFETY DATA SHEET No. 1287

# A. P. GREEN INDUSTRIES, INC. GREEN BOULEVARD, MEXICO, MO. 65265 TELEPHONE NUMBER -- 314-473-3626

#### SECTION I

PRODUCT NAME:

'SAIRSET

'SAIRSET DC

PRODUCT TYPE:

Refractory Mortar

CHEMICAL PAMILY:

Si0 2 = 58-61% Fe 2 0 3 = 1-2%

A1203 = 32-35% PORMULA: Not Applicable

#### SECTION II

#### PRODUCT HAZARDOUS INGREDIENTS

CHEMICAL

TLV-TWA

CAS #

Cristobalite (SiO \_)

0.05 mg/m 3 \*

14464-46-1

(<16%)

Respirable Dust

Quartz (SiO 2)

0.1 mg/m 3 \*

14808-60-7

(<18%)

Respirable Dust

Liquid Sodium Silicate

(15-22%)

(None)

6834-92-0

\*Source: American Conference of Governmental Industrial Hygienists, 1992-1993.

#### SECTION III

#### PHYSICAL DATA

SOLUBILITY IN WATER:

SPECIFIC GRAVITY:

2.2

MELTING POINT: Not Applicable

APPEARANCE AND ODOR:

Buff to gray granular paste; no odor.

pH: 10 - 12

#### SECTION IV

#### FIRE AND EXPLOSION HAZARD DATA

PLASH POINT:

None

EXTINGUISHING MEDIA:

Not Combustible

SPECIAL FIRE FIGHTING PROCEDURES:

None

UNUSUAL FIRE AND EXPLOSION HAZARDS:

None

# SECTION V

## HEALTH HAZARD DATA

# EFFECT OF OVEREXPOSURE:

EYES:

ACUTE: Dust or aggregate particles can cause mechanical irritation. Liquid sodium

silicate may cause eye injury or irritation.

CHRONIC: None known.

SKIN:

ACUTE: Can cause mechanical abrasion. Liquid sodium silicate can cause skin drying and

chapping.

CHRONIC: None known.

INHALATION:

ACUTE: Dust, if present, may cause upper respiratory irritation.

CHRONIC: Dust may cause lung damage if inhaled on a long-term basis.

INGESTION:

ACUTE: Unknown.

CHRONIC: Unknown.

Material Safety Data Sheet

Product: 'SAIRSET

Section V (continued)

#### EMERGENCY AND FIRST AID PROCEDURES:

EYES:

Immediately flush eyes with water for 15 minutes. Obtain prompt medical attention.

SKIN:

Wash exposed areas promptly. Consult physician if irritation occurs.

INHALATION:

Remove to fresh air. Seek medical attention.

INGESTION:

Contact physician immediately. Do not induce vomiting unless instructed to do so by a

physician.

SECTION VI

REACTIVITY DATA

STABILITY:

Stable

INCOMPATIBILITY:

None known

HAZARDOUS POLYMERIZATION:

Will not occur

#### SECTION VII

#### SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Shovel up and place in a container.

WASTE DISPOSAL METHOD: May be disposed of in an approved landfill, in accordance with local, state, and federal regulations.

#### SECTION VIII

#### SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Use NIOSH approved respirator when working around dried material or when removing this product after service.

VENTILATION:

General mechanical ventilation is adequate.

EYE PROTECTION: Goggles or safety glasses with side shields should be worn.

OTHER PROTECTION: Use of rubber gloves and long-sleeved and long-legged clothing protects hands, arms, and legs from skin contact. Safety shoes should be worn to protect feet from accidentally dropped containers of mortar.

#### SECTION IX

# SPECIAL PRECAUTIONS

Warning: This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as a Class 2A carcinogen. Its study concluded that sufficient evidence for carcinogenicity exists in experimental animals and that limited evidence for carcinogenicity exists in humans.

NIOSH approved respirators should be worn any time that refractories are torn out after service. While some respiratory hazard and or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

F

Prepared By: Ellis J. Smith

Title: Senior Technical Consultant

Phone: (314) 473-3392

## MATERIAL SAFETY DATA SHEETS

A.P. Green Refractories Co. Green Boulevard, Mexico, Missouri 65265 Tel. 314-473-3626

Product Name:

G-26

Product Type: Insulating Firebrick

# Product Chemical Composition:

# SiO<sub>2</sub> 55.0-58.0% Al<sub>2</sub>0 35.0-38.0 Fe<sup>2</sup>0<sup>3</sup> 1.0-2.0 CaO 1.0-1.6 MgO 0.1-0.6 TiO<sub>2</sub> 1.5-2.5 NaKO 1.0-2.0

# Product Mineralogical Composition:

Mullite	42-48%
Quartz	0-4
Cristobalite	0-4
Glass	52-58

# Potential Health Hazard Data:

- Dust, which may be generated in cutting and handling of this product, would irritate the eyes if it entered them, and would cause breathing discomfort.
- Chip fragments which may be generated in the handling and cutting of this brick would irritate the eyes if they entered them.
- 3. The brick may abrade the hands.

#### Recommended Disposal Method:

- Normal house keeping procedures should be followed in the event of broken brick.
- 2. Waste material may be removed to an approved landfill or dump.

#### Recommended Handling Procedure:

- 1. Wear respirator during cutting of brick, such as American Optical R-209N or equivalent.
- 2. Wear standard safety glasses.
- 3. Gloves or hand leathers may be worn to protect hands from abrasion.
- 4. Safety shoes may be worn to protect feet from dropped brick.
- 5. Avoid breathing of dust during refractory tear out after service.

# Note: This product is shipped and installed in brick form. The quartz and cristobalite of this product are present as crystallite inclusions in the bonding glass. These crystallites are

not mechanically separate from the bonding glass unless the brick are ground extremely fine and such fine grinding is not likely to occur.

This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A.P. Green Refractories or not. This information is offered solely for use in your evaluation of this product in respect to safety, health and environmental hazards.

# A. P. GREEN INDUSTRIES, INC.

MEXICO, MISSOURI 65265 U.S.A.

March 7, 1989

#### MATERIAL SAFETY DATA SHEET

A. P. Green Industries, Inc. Green Boulevard, Mexico, Missouri 65265 Telephone -- 314-473-3626

## SECTION I

PRODUCT NAME:

G-20, G-23, R-8023, R-8024

PRODUCT TYPE:

Insulating Refractory Bricks or Shapes

CHEMICAL FAMILY:

 $Sio_2 = 54-59\%$ ,  $Al_2o_3 = 33-40\%$ 

FORMULA: Proprietary

 $\text{Fe}_{3}^{0} = 1-2\%$ ,  $\text{NaKO}^{3} = 1-2\%$ 

## SECTION II

# PRODUCT HAZARDOUS INGREDIENTS

Chemical	TLV-TWA	CAS #
Cristobalite (SiO <sub>2</sub> ) *	0.05 mg/m <sup>3</sup> **	14464-46-1
	Respirable Dust	
Quartz (SiO <sub>2</sub> ) *	0.1 mg/m <sup>3</sup> ** Respirable Dust	14808-60-7

- \* Not mechanically separate from each other or from other mineralogical phases in product as supplied.
- \*\* Source: American Conference of Governmental Industrial Hygienists, 1988-1989.

#### SECTION III

#### PHYSICAL DATA

SOLUBILITY IN WATER: None

VOLATILES BY VOLUME (%): None

SPECIFIC GRAVITY: 1.6-1.9

MELTING POINT: Not Applicable

APPEARANCE AND ODOR: Buff solid; no odor

Material Safety Data Sheet Product: G-20, etc.

#### SECTION IV

#### FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: None

EXTINGUISHING MEDIA: Not Combustible

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None Known

#### SECTION V

#### HEALTH HAZARD DATA

# EFFECT OF OVEREXPOSURE:

EYES ACUTE: Dust or chips can cause mechanical irritation.

CHRONIC: None known.

SKIN ACUTE: Can cause mechanical abrasion or cuts.

CHRONIC: None known.

INHALATION ACUTE: Dust, if present, may cause upper respiratory

irritation.

CHRONIC: Dust may cause lung damage if inhaled on a long-

term basis.

INGESTION ACUTE: Unknown.

CHRONIC: Unknown.

#### EMERGENCY AND FIRST AID PROCEDURES:

EYES Immediately flush with water for 15 minutes. Consult

physician if irritation occurs.

SKIN Treat abrasions or cuts using normal first aid procedures.

INHALATION Remove to fresh air. Seek medical attention.

INGESTION Contact physician immediately. Do not induce vomiting unless

instructed to do so by physician. Product is not toxic as supplied, but its abrasive nature could damage internal

organs.

#### SECTION VI

## REACTIVITY DATA

STABILITY: Stable

INCOMPATIBILITY: None Known

HAZARDOUS POLYMERIZATION: Will Not Occur

#### SECTION VII

#### SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: For broken shapes or fragments, sweep, shovel up, or pick up.

WASTE DISPOSAL METHOD: Can be disposed of in an approved landfill, in accordance with local, state, and federal regulations.

#### SECTION VIII

#### SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Use a NIOSH approved respirator when cutting or when removing this product after service.

VENTILATION: General mechanical ventilation is adequate.

EYE PROTECTION: Goggles or safety glasses with side shields should be worn. Entry of chips into the eyes is a serious hazard, and eye protection should be worn at all times.

OTHER PROTECTION: Use of leather gloves and long-sleeved and long-legged clothing protects hands, arms, and legs from cuts or skin abrasion. Safety shoes should be worn to protect feet from accidentally dropped bricks or shapes.

#### SECTION IX

#### SPECIAL PRECAUTIONS

<u>Warning</u>: This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as a Class 2A carcinogen. Their study concluded that sufficient evidence for carcinogenicity exists in experimental animals and that limited evidence for carcinogenicity exists in humans.

NIOSH approved respirators should be worn any time that refractories are torn out after service. While some respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith

Title: Senior Technical Consultant

Phone: (314) 581-3392

# MATERIAL SAFETY DATA SHEET

A. P. GREEN INDUSTRIES, INC. GREEN BOULEVARD, MEXICO, MO. 65265 TELEPHONE NUMBER -- 314-473-3626

# SECTION I

PRODUCT: INSBLOK-19

CHEMICAL FAMILY: Slag Wool Fiber and Clay (Mixture)

## SECTION II PRODUCT INGREDIENTS

MATERIAL	%	TLV	PEL	CAS	
		mg/m <sup>3</sup>	mg/m³	NUMBER	
Slag Wool fiber *	>60	10	15(T)/5(R)	65997-17-3	
Expanded perlite	<15	10	15(T)/5(R)	93763-70-3	
Starch	<5	10	15(T)/5(R)	9005-25-8	
Cellulose (recycled paper)	<5	10	15(T)/5(R)	9004-34-6	
Kaolin	<20	10	15(T)/5(R)	1332-58-7	
Asphalt Wax Emulsion	< 2	5	5	8052-42-4	
Silica, crystalline* (quartz)	0-2	0.1(R)	0.1(R)	14808-60-7	
(* trace quantity)		7.5			
			K.		
If laminated, contains the fol	lowing adhesive:		*		
Vinyl alcohol polymer	<1	(NE)	(NE)	9002-89-5	
* - WHMIS Class D2B	(T) - Total dust	(R) - Respirable	(NE) - Not Esta	ablished	
			.=========		===

## SECTION III PHYSICAL DATA

APPEARANCE AND ODOR:

DENSITY:

Tan-colored board, low odor.

16-20 pcf

SOLUBILITY IN WATER:

None

# SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED):

None

**EXTINGUISHING MEDIA:** 

Not Combustible

SPECIAL FIRE FIGHTING PROCEDURES:

None. For Fire hazard Classification information see the

product specification sheets.

SPECIAL FIRE FIGHTING PROCEDURES:

None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

PRODUCT: INSBLOK-19

#### SECTION V HEALTH HAZARD DATA

Dust generated from this product would be considered a nuisance dust. This product can release nuisance dust in handling or during use. Eye, nose, throat, and upper respiratory irritation can occur with prolonged exposure to high concentrations. If skin irritation occurs, it is due to mechanical action of fibers rubbing skin.

#### EFFECTS OF OVEREXPOSURE:

Dust from this product may cause transitory mechanical irritation to eyes and skin or upper respiratory tract.

EYES:

ACUTE:

Immediately flush eyes thoroughly with plenty of water for 15 minutes to

remove particles. If burning, redness, itching, pain or other symptoms persist

or develop, consult physician.

CHRONIC: None Known.

SKIN:

ACUTE:

Direct, prolonged or repeated contact with the skin may cause irritation.

Rubbing of this product against the skin can result in abrasions. Rinse with water until free of material to avoid abrasions, then wash skin thoroughly with

soap and water. If irritation persists, consult physician.

CHRONIC: None Known.

INHALATION: ACUTE:

Inhalation of dusts from this product may irritate the nose, throat, lungs, and upper respiratory tract. Persons subjected to large amounts of this dust will be

forced to leave area because of nuisance conditions such as coughing, sneezing and nasal irritation from dust. If respiratory symptoms persist,

consult physician.

CHRONIC: Chronic overexposure to respirable crystalline silica can result in lung

disease(i.e., silicosis) and/or lung cancer.

If board is cut with a power saw, dust may contain respirable silica and mineral fiber. Long term breathing of quantities of respirable silica exceeding the TLV may cause lung disease. Although inconclusive, three recent industry-supported research studies indicate that factory workers who were first employed in the manufacture of mineral wool or glass wool more than 30 years ago have a somewhat higher risk of lung cancer or other disease than the general public. Tobacco smoking by these workers was found to contribute to the higher incidence of lung cancer. Because of this it is recommended that people handling this material on a regular basis not smoke.

The scientists reporting these results and independent scientists reviewing these results agree that further study is necessary to determine what other factors might be responsible for this reported increased risk. Further studies are now being conducted to investigate what effects other occupational exposures and lifestyle had on these workers. The records will also be examined to learn if these workers had exposure to other known carcinogens in the past.

Results from two separate long-term animal inhalation studies showed that breathing of airborne mineral wool fiber did not cause any lung cancer or other lung diseases.

When installing or otherwise handling this product, wear a NIOSH/MSHA-approved dust mask or respirator, gloves and long sleeved, loose-fitting clothing closed at the neck and wrists. Wear safety glasses or goggles while installing.

INGESTION:

ACUTE:

Unkown. Call physician.

CHRONIC:

Unkown.

PRODUCT: INSBLOK-19

Page 3/4

# SECTION V HEALTH HAZARD DATA (Continued)

#### EMERGENCY AND FIRST AID PROCEDURES:

EYES: Flush thoroughly with water for 15 minutes to remove particles. If irritation persists, consult physician.

SKIN: Irritated areas should be wash thoroughly by rinsing gently with cool water followed with warm water and mild soap to remove fiber from skin.

INHALATION: Inhalation of dusts from this product can irritate the nose, throat, lungs, and upper respiratory tract. Leave the area of dust exposure and remain away until coughing and other symptoms subside. If respiratory symptoms persist (irritation, cough, nausea, dizziness, etc.), consult physician.
INGESTION: Call a physician.

TARGET ORGANS: Respiratory Tract, Eyes, and Skin

MEDICAL CONDITIONS WHICH MAY BE AGGRAVATED: Pre-existing upper respiratory and lung disease such as, but not limited to, bronchitis, emphysema and asthma.

PRIMARY ROUTES OF ENTRY: Inhalation, Eyes and Skin contact.

#### CARCINOGENIC OF INGREDIENTS:

MATERIAL	IARC	NTP	OSHA
Respirable Crystalline Silica	2A	Anticipated	Not Listed
Slag Wool Fiber	2B	Not Listed	Not Listed

The quantity of respirable crystalline silica in this product has not been determined. Respirable crystalline silica is classified by IARC as a probable human carcinogen (2A). Long-term breathing of silica can cause lung disease (i.e., silicosis) and/or possibly lung cancer.

# SECTION VI REACTIVITY DATA

STABILITY:

Stable

HAZARDOUS POLYMERIZATION:

Will not occur.

INCOMPATIBILITY:

Acids (gives off H2S under certain acidic conditions).

HAZARDOUS DECOMPOSITION:

None Known.

# SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Normal cleanup procedures.

Avoid creating excessive dust. Wear appropriate protective equipment.

WASTE DISPOSAL METHOD: Depose of in accordance with federal, state and local regulations.

PRODUCT: INSBLOK-19 Page 4/4

#### SECTION VIII SPECIAL PROTECTION INFORMATION

No TLV assigned to this product, see Ingredients Section. Minimize exposures in accordance with good hygiene practice.

RESPIRATORY PROTECTION: Avoid inhalation of dust. Dust from product may cause skin, eye, nose, throat or upper respiratory irritation. Wear a NIOSH/MSHA-approved respirator if TLV is exceeded and/or when dusty conditions exist to guard against nuisance particles.

VENTILATION: Provide general ventilation and local exhaust ventilation to meet TLV requirements. PROTECTIVE EQUIPMENT: Gloves if dust is irritating, tight fitting goggles in dusty environment. Wear long sleeved, loose fitting clothing closed at the neck and wrists and minimize skin exposure. Wash work clothes separately from other clothing. Rinse washer thoroughly after use. Wear safety glasses or goggles for eye protection to avoid particulate irritation of the eye.

#### SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in a dry place. When cutting or breaking, avoid creating excessive dust. Minimize exposures in accordance with good hygiene practice. During handling wear the appropriate respiratory, eye and skin protection if warranted per environmental conditions.

OTHER PRECAUTIONS: During the initial firing of a vessel insulated with this product, if the insulations temperature exceeds approximately 450°F the combustion products of a paper fire will be emitted. If the initial firing or curing is done in an oxygen deficient atmosphere, carbon monoxide and aldehydes are likely to be produced. Therefore the adjacent area must be well ventilated.

# △ WARNING

Dust hazard. Cut and trim with knife, razor or hand saw. Do not cut with power equipment unless a dust collector is used on the equipment or local exhaust is used and a NIOSH/MSHA-approved respirator is worn. Failure to follow these instructions may result in overexposure to airborne man-made mineral fiber. Airborne man-made mineral fiber and crystalline silica are thought to increase the risk of lung cancer.

Overexposure to dust can cause eye, skin, nose, throat or respiratory irritation. Wear eye and skin protection.

FIRST AID: For skin irritation, rinse with cool water, followed by washing with soap and warm water. For eye irritation, flush eyes thoroughly with water for 15 minutes. If irritation persists, consult a physician. Product safety information: (314) 473-3626.

THIS PRODUCT CONTAINS NO ASBESTOS.

Manufactured for A.P. Green Industries, Inc. by USG Interiors, Inc. 125 S. Franklin Street Chicago, IL 60606

# MATERIAL SAFETY DATA SHEET

Date: 07/14/95

Nos. 3297 3904, 3102

# A. P. GREEN INDUSTRIES, INC. GREEN BOULEVARD, MEXICO, MO 65265 EMERGENCY TELEPHONE NUMBER — 314-473-3626

#### SECTION I

PRODUCT NAME:

INSWOOL BLANKET INSWOOL HP BLANKET INSWOOL -HP-M BLANKET\* INSWOOL -HT BLANKET INSWOOL ® -HT-M BLANKET\* INSWOOL\_-LT BLANKET INSWOOL® ®-LT-M BLANKET\*

INSWOOL. -M BLANKET INSWOOL MODULE BE-104 INSWOOL BULK

INSWOOL -HP BULK INSWOOL -HP-M BULK \* INSWOOL -HT BULK

INSWOOL ® -HT-M BULK\* INSWOOL -LT BULK INSWOOL®-LT-M BULK\*

INSWOOL -M BULK

PRODUCT TYPE:

Refractory Ceramic Fiber Blanket or Bulk

CHEMICAL FAMILY: Not Applicable

FORMULA: Not Applicable

# SECTION II PRODUCT HAZARDOUS INGREDIENTS

CHEMICAL

TLV-TWA

CAS #

Refractory Ceramic Fiber (Al<sub>2</sub>O<sub>3</sub>-SiO<sub>2</sub>)

1 fiber/cc\*

142844-00-6

\*A. P. Green workplace exposure guideline. See also Section III.

## SECTION III HAZARDS INFORMATION

International Agency for Research on Cancer (IARC) has classified refractory ceramic fiber as 2B possibly carcinogenic to humans.

As supplied, product contains no crystalline silica; however, when exposed to temperatures above 1800°F (982°C) during service, cristobalite, a form of crystalline silica, may form. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as a Class 2A carcinogen. Its study concluded that sufficient evidence for carcinogenicity exists in experimental animals and that limited evidence for carcinogenicity exists in humans.

Dust from product at any stage of its use or during tear-out after service may, especially on long exposure, lead to lung disease unless respiratory protection is employed. NIOSH approved respirators should be worn any time that refractories are torn out after service. While a respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

Contact between refractory ceramic fibers and skin may result in transitory skin rash. Susceptibility varies with individuals, with some individuals showing no susceptibility.

<sup>\*</sup>Manufactured in the Republic of Mexico.

# SECTION IV FIRST AID MEASURES

#### EFFECT OF OVEREXPOSURE:

EYES:

ACUTE:

Causes mechanical irritation.

CHRONIC:

None Known

SKIN:

ACUTE:

May cause skin irritation.

CHRONIC:

None Known

INHALATION: ACUTE:

Dust generated can cause breathing discomfort.

CHRONIC:

Long-term exposure to dust may cause lung damage.

INGESTION:

ACUTE:

Unknown

CHRONIC:

Unknown

# FIRST AID MEASURES:

EYES:

Flush with clean water for 15 minutes. If irritation occurs, consult physician.

SKIN:

Wash with soap and water. If irritation occurs, consult physician.

INHALATION: Remove to fresh air. Seek medical attention.

INGESTION:

Contact physician immediately. Do not induce vomiting unless instructed to do so by

physician. Product is non-toxic as supplied, but its abrasive nature could damage

internal organs.

# SECTION V FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES:

Non-Flammable

EXTINGUISHING MEDIA:

Not applicable for product.

FIRE FIGHTING INSTRUCTIONS:

No special instructions.

# SECTION VI **ACCIDENTAL RELEASE MEASURES**

SMALL/LARGE SPILL: Dampen, then pick up or scoop up and place in a container for disposal.

# SECTION VII HANDLING AND STORAGE

Store in a dry place, away from extreme heat. Product is non-flammable, but packaging is combustible.

## SECTION VIII EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:

Use adequate ventilation to meet exposure controls (SECTION II).

Material Safety Data Sheet

Product: INSWOOL BLANKET, etc.

RESPIRATORY PROTECTION: Use a NIOSH approved respirator for mineral dusts when working with

this product.

EYE PROTECTION:

Use safety glasses with side shields to avoid eye contact.

SKIN PROTECTION:

Wear impervious gloves and long-sleeved clothing to avoid skin contact.

Cleanse exposed skin after any contact.

OTHER:

Wash work clothing separately; rinse washing machine thoroughly after

use.

SECTION IX

PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:

White to Off-White Fiber, in Blanket or Bulk Form

**BOILING POINT:** 

Not Applicable

pH:

None

SOLUBILITY IN WATER:

None

ODOR:

10110

SPECIFIC GRAVITY:

Not Applicable

MELTING POINT:

Not Applicable

SECTION X STABILITY AND REACTIVITY

Product is stable under normal conditions of use, storage, and transportation.

Product can react with concentrated acids.

SECTION XI TOXICOLOGICAL INFORMATION

LD<sub>50</sub> or LC<sub>50</sub> for oral, dermal, or inhalation routes of administration: no data for product.

SECTION XII ECOLOGICAL INFORMATION

Ecotoxicological/chemical fate information: not available.

SECTION XIII
DISPOSAL CONSIDERATIONS

As supplied, product may be disposed of in an approved landfill, in accordance with federal, state, and local regulations.

Supplier can make no statement concerning disposal of <u>used</u> product, since product may become contaminated by hazardous materials during use.

SECTION XIV TRANSPORT INFORMATION

U.S.A. DOT:

Not Regulated

Canadian TDG Hazard Class & PIN:

Not Regulated

# SECTION XV REGULATORY INFORMATION

TSCA Status: All Components Listed Canadian DSL: All Components Listed

SARA Title III, Section 313: This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in Section II - HAZARDOUS INGREDIENTS section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

# SECTION XVI OTHER INFORMATION

MSDS Status: New format, replaces MSDS Dated 06/28/92.

Note: This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith

Senior Technical Consultant Phone: 314-473-3392

JH:\MSDS\CURRENT\IWB.075

\*\* MATERIAL SAFETY DATA SHEET \*\*

CHEMTREC 24 Hour Emergency

Assistance Phone No.: 1-800-424-9300

HARBISON-WALKER REFRACTORIES DIVISION OF INDRESCO INC. ONE GATEWAY CENTER PITTSBURGH, PA 15222

Latest Revision Date...05/07/93

Print Date.....02/09/95

Prepared By: S. W. Thrower (412-562-6437)

SECTION 1 PRODUCT IDENTIFICATION

PRODUCT TRADENAME..... UFALA

TYPE OF REFRACTORY..... High Alumina Brick

H-W BRAND CODE..... 420562

HMIS RATING..... Health: 2 0 = Minimal

Flammability: 0

Reactivity: 0 2 = Moderate 3 = Serious

4 = Severe

1 = Slight

UFALA

SECTION 2 HAZARDOUS INGREDIENTS / HAZARD DATA

CHEMICAL NAME (CHEMICAL FORMULA)

CAS NUMBER % WEIGHT OSHA TWA

ACGIH TLV

SEC.31

Cristobalite (SiO2)

14464-46-1 5-7 0.05 mg/cubic meter No

Alumina (Non-Fibrous) (Al203) 1344-28-1 58-60 10 mg/cubic meter 10 mg/cubic meter No

\_\_\_\_\_\_

SECTION 3 PHYSICAL DATA

oH..... Not determined

SPECIFIC GRAVITY OR BULK DENSITY 2.53

SOLUBILITY IN WATER..... Insoluble APPEARANCE..... Buff color ODOR..... No odor

FORM..... Brick

SECTION 4 FIRE AND EXPLOSION HAZARD DATA

Unless otherwise noted, no fire hazard.

Product is a refractory and will not burn.

SECTION 5 EFFECTS OF OVEREXPOSURE \* ROUTE OF ENTRY

EFFECTS OF OVEREXPOSURE SKIN EYES INHALATION INGREDIENT Delayed lung fibrosis - silicosis Crystalline Silica No Yes Crystalline Silica Irritant to skin, eyes, mucous membranes Yes Yes Yes Irritant to skin, eyes, mucous membranes Yes

SECTION 6 EMERGENCY AND FIRST AID PROCEDURES

Irritants: Wash from skin or flush from eyes using large amounts of water.

\_\_\_\_\_\_

\_\_\_\_\_\_

SECTION 7 REACTIVITY DATA

PRODUCT STABILITY..... Stable CHEMICAL INCOMPATIBILITY..... None

HAZARDOUS DECOMPOSITION PRODUCTS N/A

HAZARDOUS POLYMERIZATION..... Will not occur

Page 1

#### UFALA

SECTION 7 REACTIVITY DATA CONT'D

MATERIAL TO AVOID..... None

\_\_\_\_\_\_

# SECTION 8

# SPILL AND LEAK PROCEDURES

Most refractory products may be landfilled. However, since your application of this product may change its chemical characteristics, and since disposal procedures may vary with locale and are subject to change, you should consult the governmental authority having jurisdiction for disposal information.

\_\_\_\_\_\_

#### SECTION 9

# SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION...... Where air contaminants can exceed acceptable criteria, use approved

respiratory protection equipment

appropriate to form and concentration of

air contaminants.

VENTILATION..... Local exhaust ventilation should be

provided if routine operation generates

dust in excess of allowable limits.

PROTECTIVE GLOVES..... Abrasion resistant

EYE PROTECTION..... Approved safety glasses, goggles, or

faceshields should be used.

FOOT PROTECTION..... Metatarsal safety shoes

OTHER PRECAUTIONS..... None

# SECTION 10

#### SPECIAL PRECAUTIONS

This product contains crystalline silica for which there is limited evidence of a possible association with the incidence of cancer in humans.

#### SECTION 11

#### SUPPLIER INFORMATION

This MSDS is based on OSHA FORM 174 but modified to more adequately suit refractory products. All data are subject to reasonable variation. This information is supplied in good faith by Harbison-Walker and is applicable to the product as shipped. Your application of the product may change its characteristics. THE DATA PROVIDED HEREIN ARE BELIEVED CORRECT OR ARE OBTAINED FROM SOURCES BELIEVED TO BE GENERALLY RELIABLE. HARBISON-WALKER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF THIS PRODUCT, AND HARBISON-WALKER ASSUMES NO OBLIGATION OR LIABILITY FOR RELIANCE OF THE INFORMATION CONTAINED IN THIS MSDS. This data is not part of any contract or condition of sale. It is solely supplied as an accommodation to the buyer.

# MATERIAL SAFETY DATA SHEET



WARNING LABEL: SILICA

NUISANCE DUST

TELEPHONE: (412) 562-6200 TELETYPE: 710-664-4347

10/01/84

#### DISCLAIMER

This data sheet is based on OSHA FORM 20 but modified to more adequately suit refractory products. All data are subject to reasonable variation. This information is supplied in good faith by Harbison-Walker and is applicable to the product as shipped. Your application of the product may change its characteristics. THE DATA PROVIDED HEREIN ARE BELIEVED CORRECT OR ARE OBTAINED FROM SOURCES BELIEVED TO BE GENERALLY RELIABLE. HARBISON-WALKER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF THIS PRODUCT, AND HARBISON-WALKER ASSUMES NO OBLIGATION OR LIABILITY FOR RELIANCE ON THE INFORMATION CONTAINED IN THIS DATA SHEET. This data is not part of any contract or condition of sale. It is solely supplied as an accommodation to the buyer.

SECTION I - PRODUCT IDENTIFICATION				
Product Tradename:	Type of Refractory:*			
H-W LIGHTWEIGHT CASTABLE 22 - C-CURED	Fireclay Castable			
*For chrome containing refractories, indicate approximate per  Contains chrome ore consisting predominantly of the mineral  Contains chromium III oxide	rcentage, and check applicable block. chromite (MgFe).0.(AlFeCr)2O3	=		

		SEC	TION II - HAZARDO	OUS INGREDIENTS		
SEE CHECKED BLOCKS INGREDIENT	GEN. CHEM. FORMULA	C.A.S. NUMBER	PERCENTAGE RANGE	OSHA P.E.L.	ACGIH TLV®	NIOSH CRITERIA
Quartz Cristobalite Tridymite Fused Silica Coal Tar Products Petroleum Pitch Phosphoric Acid Lime Sodium Silicate	SiO <sub>2</sub> SiO <sub>2</sub> SiO <sub>2</sub> SiO <sub>2</sub> N/A N/A N/A CGO 03-Si .2Ng	001317799 14464-46-1 15468-32-3 007631869 MX8001589 MX8052424 007664382 001305788	0 - 3% 2 - 5%	10 mg/m <sup>3</sup> % Respirable Quartz +2 ½ Quartz Value ½ Quartz Value NONE 0.2 mg/m <sup>3</sup> NONE 1.0 mg/m <sup>3</sup> (mist) 5.0 mg/m <sup>3</sup>	SAME SAME Use Quartz TLV SAME 5.0 mg/m <sup>3</sup> SAME 2.0 mg/m <sup>3</sup>	75-120 75-120 75-120 75-120 78-107 78-106 NONE NONE
0	safe hea	t up of the	refractory.	ains a proprietar The fiber is not toxic and should	iceable to worke	rs during

		SECTION III - PHYSICAL DATA		
Appearance and Odor:  Specific Gravity: 0.	Gray to tan color; ea	arthy odor.  pH: ND	X.	
Solubility in Water: Soluble Constituents: Other:	Slightly soluble. Calcium Aluminate Cer	ment		

SECTION IV - FIRE AND EXPLOSION DATA	
UNLESS OTHERWISE NOTED, NONE. Product is a refractory.	
NOTES:	

	SECTION V - HEALTH	HAZARD DATA		
*SEE CHECKED BLOCKS				E REQUIRED
INGREDIENT	EFFECTS OF O	VEREXPOSURE	PROLONGED	SHORT TER
ree Crystalline Silica	Delayed lung fibrosis - silicosis		V	
Coal Tar Products	Skin, lung, mucous membrane carcinogen		V	
Coal Tar Products	Skin irritation; photosensitization			V
Petroleum Pitch	(Same as Coal Tar Products)			
Lime	Irritant to skin, eyes, mucous membranes, etc			V
Phosphoric Acid	Primary Irritant - skin, eyes, etc.			V
Sodium Silicate	Irritant to skin, eyes, mucous membranes, etc			V
1				
1				
Coal Tar Products:	Remove from skin by washing with soap and v	valer, DO NOT use solvents, 3ame	ror perroleum pirch.	
	SECTION VI - REA	CTIVITY DATA		
STABILITY: A STABL		COMMENTS:		
Incompatability (materia Hazardous decomposition	ls to avoid) products:	Store in dry area pric	or to use.	
Incompatability (materia Hazardous decomposition Hazardous Polymerization	Is to avoid) products: n:	Store in dry area pric		
Incompatability (materia Hazardous decomposition Hazardous Polymerization	ls to avoid) i products: n: □ may occur ¤ will not occur	Store in dry area price  AD LEAK PROCEDURES on of this product may change its ch	emical characterístics, c	
Incompatability (materia Hazardous decomposition Hazardous Polymerization July 1985 - July	Is to avoid)  products:  m:	Store in dry area prices  ID LEAK PROCEDURES  Ion of this product may change its change	emical characterístics, c	
Incompatability (materia Hazardous decomposition Hazardous Polymerization  3st refractory products disposal procedures may disposal information.  COMMENTS:	SECTION VIII - SPECIAL PRO	Store in dry area prices  ID LEAK PROCEDURES on of this product may change its change it	emical characterístics, c	
Incompatability (materia Hazardous decomposition Hazardous Polymerization  Jast refractory products disposal procedures may disposal information.  COMMENTS:  RESPIRATORY PROTECTION VENTILATION: Local exh PROTECTIVE GLOVES (C	SECTION VIII - SPILL AN SECTION VIII - SPECIAL PRODUCT Approved Dust aust ventilation should be provided if routine of the CK TYPE):  Acid Resistant Improved safety glasses, goggles or faceshields should be called the control of th	Store in dry area price  ID LEAK PROCEDURES  Ion of this product may change its change i	emical characteristics, c authority having jurisd f allowable limits	iction for
Incompatability (materia Hazardous decomposition Hazardous Polymerization  Jat refractory products disposal procedures may disposal information.  COMMENTS:  RESPIRATORY PROTECTION VENTILATION: Local exh PROTECTIVE GLOVES (C EYE PROTECTION: Appro	SECTION VIII - SPILL AN SECTION VIII - SPECIAL PRODUCT Approved Dust aust ventilation should be provided if routine of the CK TYPE):  Acid Resistant Improved safety glasses, goggles or faceshields should be called the control of th	Store in dry area price  DEAK PROCEDURES  On of this product may change its chu should consult the governmental of the should consult the governmental of the should consult the governmental of the should consult the governmental of the should consult the governmental of the should consult the governmental of the should consult the governmental of the should be should be should be used when handling refractor permeable	emical characteristics, c authority having jurisd f allowable limits	iction for
Incompatability (materia Hazardous decomposition Hazardous Polymerization  Jet refractory products disposal procedures may disposal information.  COMMENTS:  RESPIRATORY PROTECTION VENTILATION: Local exh PROTECTIVE GLOVES (C EYE PROTECTION: Appro	SECTION VIII - SPILL AN Many be landfilled. However, since your applicate vary with locale and are subject to change, you sust ventilation should be provided if routine of MECK TYPE):  Acid Resistant   Improved Safety glasses, goggles or faceshields should be provided. Section 1.	Store in dry area price  ID LEAK PROCEDURES  Ion of this product may change its chu should consult the governmental of the store of the	emical characteristics, cauthority having jurisdiction of the state of	iction for

# MATERIAL SAFETY DATA SHEET



WARNING LABEL: SILICA NUISANCE DUST TELEPHONE: (412) 562-6200 TELETYPE: 710-664-4347

10/01/84

#### DISCLAIMER

This data sheet is based on OSHA FORM 20 but modified to more adequately suit refractory products. All data are subject to reasonable variation. This information is supplied in good faith by Harbison-Walker and is applicable to the product as shipped. Your application of the product may change its characteristics. THE DATA PROVIDED HEREIN ARE BELIEVED CORRECT OR ARE OBTAINED FROM SOURCES BELIEVED TO BE GENERALLY RELIABLE. HARBISON-WALKER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF THIS PRODUCT, AND HARBISON-WALKER ASSUMES NO OBLIGATION OR LIABILITY FOR RELIANCE ON THE INFORMATION CONTAINED IN THIS DATA SHEET. This data is not part of any contract or condition of sale. It is solely supplied as an accommodation to the buyer.

SECTION I - PRODUCT IDENTIFICATION		
Product Tradename:	Type of Refractory:*	
H-W LIGHTWEIGHT ES REFRACTORY - C-CURED	Fireclay Insulating Castable	
*For chrome containing refractories, indicate approximate pe  Contains chrome ore consisting predominantly of the mineral  Contains chromium III oxide	rcentage, and check applicable block.	

SEE CHECKED BLOCKS INGREDIENT	GEN, CHEM. FORMULA	C.A.S. NUMBER	PERCENTAGE RANGE	OSHA P.E.L.	ACGIH TLV®	NIOSH CRITERIA DOCUMENT NO
Quartz Cristobalite Tridymite Fused Silica Coal Tar Products Petroleum Pitch Phosphoric Acid Lime Sodium Silicate	SiO <sub>2</sub> SiO <sub>2</sub> SiO <sub>2</sub> SiO <sub>2</sub> N/A N/A N/A H <sub>3</sub> PO <sub>4</sub> CaO 03-Si .2Na	001317799 14464-46-1 15468-32-3 007631869 MX8001589 MX8052424 007664382 001305788 006834920	2 - 5% 2 - 5%	10 mg/m³ % Respirable Quartz +2 ½ Quartz Value ½ Quartz Value NONE 0.2 mg/m³ NONE 1.0 mg/m³ (mist) 5.0 mg/m³ NONE	SAME SAME SAME Use Quartz TLV SAME 5.0 mg/m <sup>3</sup> SAME 2.0 mg/m <sup>3</sup>	75-120 75-120 75-120 75-120 78-107 78-106 NONE NONE
	safe hea	t up of the	refractory.	ains a proprietary The fiber is noti -toxic and should	ceable to worke	rs during

	SECTION III - PHYSICAL DATA	
Appearance and Odor:	Tan to gray color; earthy odor.	
Specific Gravity:	.20 pH:ND	_
Solubility in Water: Soluble Constituents: Other:	Slightly soluble. Calcium Aluminate Cement.	

SECTION IV - FIRE AND EXPLOSION DATA	
UNLESS OTHERWISE NOTED, NONE. Product is a refractory.  NOTES:	

	SECTION V - HEALTI	HAZARD DATA*		
*SEE CHECKED BLOCKS	T.			RE REQUIRED
INGREDIENT	EFFECTS OF	OVEREXPOSURE	PROLONGED	SHORT TERM
Crystalline Silica	Delayed lung fibrosis - silicosis		V	
Coal Tar Products	Skin, lung, mucous membrane carcinogen		V	,
	Skin irritation; photosensitization			1
Petroleum Pitch	(Same as Coal Tar Products)			ļ
Lime	Irritant to skin, eyes, mucous membranes, e	tc.		V
Phosphoric Acid	Primary Irritant - skin, eyes, etc.			V
Sodium Silicate	Irritant to skin, eyes, mucaus membranes, e	tc.		V
Other:	SECTION VI - RE			
TABILITY: X STAB	als to avoid)	COMMENTS:		
	on:   may occur   will not occur		s chemical characteristics,	
Hazardous Polymerization	SECTION VII - SPILL A	ND LEAK PROCEDURES	s chemical characteristics,	
Mazardous Polymerization  Mac refractory products disposal procedures ma disposal information.	SECTION VII - SPILL As may be landfilled. However, since your applicately vary with locale and are subject to change, y	ND LEAK PROCEDURES	s chemical characteristics,	
Mc refractory products disposal procedures ma disposal information.  COMMENTS:	SECTION VII - SPILL A SECTION VIII - SPECIAL P	NND LEAK PROCEDURES stion of this product may change it rou should consult the government ROTECTION INFORMATION  Other (Specify):	s chemical characteristics, tal authority having jurisc	
Mc refractory products disposal procedures ma disposal information.  COMMENTS:  RESPIRATORY PROTECT VENTILATION: Local ex	SECTION VII - SPILL A smay be landfilled. However, since your applica y vary with locale and are subject to change, y  SECTION VIII - SPECIAL P  SECTION VIII - SPECIAL P  Approved Dust haust ventilation should be provided if routine  CHECK TYPE):   Acid Resistant   Improved safety glasses, goggles or faceshields should be provided in the second safety glasses, goggles or faceshields should be provided in the second safety glasses, goggles or faceshields should be provided in the second safety glasses, goggles or faceshields should be provided in the second safety glasses, goggles or faceshields should be provided in the second safety glasses, goggles or faceshields should be provided in the second safety glasses, goggles or faceshields should be provided in the second safety glasses, goggles or faceshields should be provided in the second safety glasses, goggles or faceshields should be provided in the second safety glasses, goggles or faceshields should be provided in the second safety glasses, goggles or faceshields should be provided in the second safety glasses, goggles or faceshields should be provided in the second safety glasses, goggles or faceshields should be provided in the second safety glasses, goggles or faceshields should be provided in the second safety glasses, goggles or faceshields should be provided in the second safety glasses, goggles or faceshields should be provided in the second safety glasses, goggles or faceshields should be provided in the second safety glasses.	ROTECTION INFORMATION  Other (Specify): operation generates dust in excepterments	s chemical characteristics, tal authority having jurisc ss of allowable limits	liction for
Mc refractory products disposal procedures ma disposal information.  COMMENTS:  RESPIRATORY PROTECT VENTILATION: Local ex	SECTION VIII - SPILL A smay be landfilled. However, since your applica y vary with locale and are subject to change, y  SECTION VIII - SPECIAL P  SECTION VIII - SPECIAL P  SECTION VIII - SPECIAL P  Approved Dust haust ventilation should be provided if routine  CHECK TYPE):  Acid Resistant  Improved safety glasses, goggles or faceshields should be possible of the safety  SECK TYPE):  Metatarsal safety	ROTECTION INFORMATION  Other (Specify): operation generates dust in excepterments	s chemical characteristics, tal authority having jurisc ss of allowable limits	liction for
Mc refractory products disposal procedures ma disposal information.  COMMENTS:  RESPIRATORY PROTECT VENTILATION: Local extended by the protective GLOVES (CEYE PROTECTION: Applied by the protection of the pro	SECTION VIII - SPILL A smay be landfilled. However, since your applica y vary with locale and are subject to change, y  SECTION VIII - SPECIAL P  SECTION VIII - SPECIAL P  SECTION VIII - SPECIAL P  Approved Dust haust ventilation should be provided if routine  CHECK TYPE):  Acid Resistant  Improved safety glasses, goggles or faceshields should be possible of the safety  SECK TYPE):  Metatarsal safety	ROTECTION INFORMATION  Other (Specify): operation generates dust in exceptulation of the product may change it in exceptulation of the product may change it in exceptulation generates dust i	s chemical characteristics, tal authority having jurisc ss of allowable limits	liction for
Mc refractory products disposal procedures ma disposal information.  COMMENTS:  RESPIRATORY PROTECT VENTILATION: Local extended by the protective GLOVES (CEYE PROTECTION: Applied by the protection of the pro	SECTION VIII - SPILL AS may be landfilled. However, since your applicately vary with locale and are subject to change, your with locale and are subject to change, you haust ventilation should be provided if routine CHECK TYPE):  CHECK TYPE):  Acid Resistant   Improved safety glasses, goggles or faceshields should be considered in the consideration of the considera	ROTECTION INFORMATION  Other (Specify): operation generates dust in exceptulation of the product may change it in exceptulation of the product may change it in exceptulation generates dust i	s chemical characteristics, tal authority having jurisc ss of allowable limits	liction for
Mc refractory products disposal procedures ma disposal information.  COMMENTS:  RESPIRATORY PROTECT VENTILATION: Local extended to the protective GLOVES (CEYE PROTECTION: Appropriate CLOTHING)	SECTION VIII - SPILL AS may be landfilled. However, since your applicately vary with locale and are subject to change, your with locale and are subject to change, you haust ventilation should be provided if routine CHECK TYPE):  CHECK TYPE):  Acid Resistant   Improved safety glasses, goggles or faceshields should be considered in the consideration of the considera	ROTECTION INFORMATION  Other (Specify): operation generates dust in exceptual be used when handling refree mpermeable  CIAL PRECAUTIONS	s chemical characteristics, tal authority having jurisc services of allowable limits stant    Other (Specificatory products.	liction for
Mc refractory products disposal procedures ma disposal information.  COMMENTS:  RESPIRATORY PROTECT VENTILATION: Local extended to the protective GLOVES (CEYE PROTECTION: Appropriate CLOTHING)	SECTION VIII - SPILL AS may be landfilled. However, since your applicately vary with locale and are subject to change, your with locale and are subject to change, you haust ventilation should be provided if routine CHECK TYPE):  Acid Resistant   Improved safety glasses, goggles or faceshields should be compared to the control of the c	ROTECTION INFORMATION  Other (Specify): operation generates dust in exceptual be used when handling refree mpermeable  CIAL PRECAUTIONS	s chemical characteristics, tal authority having jurisc services of allowable limits stant    Other (Specificatory products.	liction for

## MATERIAL SAFETY DATA SHEET

Date: 10/18/95

No. 846

#### A. P. GREEN INDUSTRIES, INC. GREEN BOULEVARD, MEXICO, MO 65265 EMERGENCY TELEPHONE NUMBER — 314-473-3626

#### SECTION I

PRODUCT NAME:

**GREENKLEEN-60** 

GREENKLEEN-60 Plus

PRODUCT TYPE:

Castable Refractory

CHEMICAL FAMILY:

= 30-35%

 $Al_2O_3 = 58-62\%$ 

FORMULA: Not Applicable

CaO = 2-4%

SiO2

 $Fe_2O_3 = 1\%$ 

# SECTION II PRODUCT HAZARDOUS INGREDIENTS

CHEMICAL

TLV-TWA

CAS #

Cristobalite (SiO<sub>2</sub>)

0.05 mg/m3\*

14464-46-1

(<5%)

Respirable Dust

Quartz (SiO<sub>2</sub>)

0.1 mg/m<sup>3\*</sup> Respirable Dust 14808-60-7

(<2%)

2 mg/m<sup>3</sup>\*

69012-64-2

Amorphous Silica (<4-6%)

Respirable Dust

Alumina (Al<sub>2</sub>O<sub>3</sub>)

10 mg/m<sup>3</sup>\*

1344-28-1

(8-12%)

Total Dust

Refractory Cement

None (See Section V)

12005-57-1

\*Source: American Conference of Governmental Industrial Hygienists, 1994-1995.

# SECTION III PHYSICAL DATA

SOLUBILITY IN WATER:

Slight

VOLATILES BY VOLUME (%): Nil

SPECIFIC GRAVITY:

2.8

MELTING POINT: Not Applicable

APPEARANCE AND ODOR:

Gray, tp tan granular material; no odor

pH:

8-9

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:

None

EXTINGUISHING MEDIA:

Material is non-flammable.

SPECIAL FIRE FIGHTING PROCEDURES:

None

Material Safety Data Sheet Product: GREENKLEEN-60, etc.

UNUSUAL FIRE AND EXPLOSION HAZARDS: When heated to decomposition, the fluorspar in this product will give off toxic fumes of fluorine.

#### SECTION V HEALTH HAZARD DATA

#### EFFECT OF OVEREXPOSURE:

EYES:

ACUTE:

Dust can irritate eyes. Product's cement can cause eye injury.

CHRONIC:

Unknown

SKIN:

ACUTE:

Product's cement can cause skin irritation.

CHRONIC:

Unknown

INHALATION: ACUTE:

Dust generated can cause breathing discomfort.

CHRONIC:

Long-term exposure to dust may cause lung damage.

INGESTION:

ACUTE:

Unknown

CHRONIC:

Unknown

EYES:

Flush with clean water for 15 minutes. If irritation occurs, consult physician.

SKIN:

Wash with soap and water. If irritation occurs, consult physician.

INHALATION: Remove to fresh air. Seek medical attention.

INGESTION:

Contact physician immediately. Do not induce vomiting unless instructed to do so by

physician. Product is non-toxic as supplied, but its abrasive nature could damage

internal organs.

SECTION VI REACTIVITY DATA

STABILITY:

Stable

INCOMPATIBILITY:

None known

HAZARDOUS POLYMERIZATION:

Will not occur

#### SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: If dry, predampen and sweep or shovel up. If wet (after mixing with water for use), sweep or shovel up.

WASTE DISPOSAL METHOD: In the as-supplied condition, product can be disposed of in an approved landfill, in accordance with local, state, and federal regulations.

# SECTION VIII SPECIAL PROTECTION INFORMATION

**RESPIRATORY PROTECTION:** Use NIOSH approved respirator when working around dried material and when removing this product after service.

VENTILATION:

General mechanical ventilation is usually adequate.

EYE PROTECTION:

Goggles or safety glasses with side shields should be worn.

OTHER PROTECTION: Gloves and long-sleeved and long-legged clothing should be worn to prevent skin contact. Safety shoes should be worn to prevent foot injury from accidentally dropped bags of castable.

# SECTION IX SPECIAL PRECAUTIONS

Warning: On initial burn-in, the fluorspar present in this product will produce toxic fumes of fluorine.

<u>Warning</u>: This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as a Class 2A carcinogen. Their study concluded that sufficient evidence for carcinogenicity exists in experimental animals and that limited evidence for carcinogenicity exists in humans.

NIOSH approved respirators should be worn any time that refractories are torn out after service. While some respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in Section II - HAZARDOUS INGREDIENTS section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith

Title: Senior Technical Consultant

Phone: (314) 473-3392

JH:\MSDS\CURRENT\GK60.105

### MATERIAL SAFETY DATA SHEET

Date: 03/13/95

No. 5047

# A. P. GREEN INDUSTRIES, INC. GREEN BOULEVARD, MEXICO, MO. 65265 EMERGENCY TELEPHONE NUMBER — 314-473-3626

#### SECTION I

PRODUCT NAME:

LO-ABRADE GR

LO-ABRADE GR Plus

PRODUCT TYPE:

Castable Refractory

CHEMICAL FAMILY: SiO,

= 39-41%

 $Al_2O_3 = 48-50\%$ 

FORMULA: Not Applicable

CaO = 5-7%

 $Fe_2O_3 = 1-2\%$ 

NOTE: The above listed products differ in one or more physical characteristics but are chemically equivalent. Information given in Sections II through IX of this Material Safety Data Sheet applies to each product.

#### SECTION II

#### PRODUCT HAZARDOUS INGREDIENTS

CHEMICAL

TLV-TWA

CAS #

Cristobalite (SiO<sub>2</sub>)

0.05 mg/m<sup>3</sup>\*

14464-46-1

(5-15%)

Respirable Dust

H. P. ARCH. BRIDE

Amorphous Silica

2 mg/m3\*

69012-64-2

(<10%)

Respirable Dust

Refractory Cement

(<15%)

None (See Section V)

12005-57-1

\*Source: American Conference of Governmental Industrial Hygienists, 1994-1995.

# SECTION III PHYSICAL DATA

SOLUBILITY IN WATER:

Slight

VOLATILES BY VOLUME (%): Nil

SPECIFIC GRAVITY:

2.7

MELTING POINT: Not Applicable

APPEARANCE AND ODOR:

Gray, granular mixture; no odor

SECTION IV

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:

None

EXTINGUISHING MEDIA:

Material is non-flammable.

SPECIAL FIRE FIGHTING PROCEDURES:

None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

OTHER PROTECTION: Gloves and long sleeved and long legged clothing should be worn to prevent skin contact. Safety shoes should be worn to prevent foot injury from accidentally dropped bags of castable.

# SECTION IX SPECIAL PRECAUTIONS

<u>Warning</u>: This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as a Class 2A carcinogen. Their study concluded that sufficient evidence for carcinogenicity exists in experimental animals and that limited evidence for carcinogenicity exists in humans.

NIOSH approved respirators should be worn any time that refractories are torn out after service. While some respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in Section II - HAZARDOUS INGREDIENTS section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith

Title: Senior Technical Consultant

Phone: (314) 473-3392

JH:\MSDS\CURRENT\LAGR.035

PROPERTIES	SUPER PYRAMID AS	PYRAMID 60	PYRAMID 70	PYRAMID 80
Maximum Temperature, °F	3000	3150	3200	3250
Material Required to Install, lb/ft3	150	160	170	172
Chemical Composition, % by Wt.				
SiO <sub>2</sub>	53.2	36.7	23.6	12.1
Al <sub>2</sub> O <sub>3</sub>	42.8	58.6	70.5	79.4
Fe <sub>2</sub> O <sub>3</sub>	0.9	1.2	2.5	1.6
CaO	0.1	0.1	0.1	0.1
TiO <sub>2</sub>	2.1	2.5	2.7	2.9
MgÔ	0.2	0.1	0.1	0.1
K,0	< 0.4	< 0.3	< 0.3	< 0.2
Na <sub>2</sub> O	< 0.4	< 0.3	< 0.3	< 0.2
$P_2O_5$		0.3	(HE)	0.1
Bulk Density, lb/ft <sup>3</sup>				
After Firing to 230°F		148	**	162
After Firing to 3000°F	127	126	169	142
Total Linear Change, %				
After Firing to 1500°F	-0.6	-1.3	-1.7	-1.2
After Firing to 2000°F	-0.6	-1.3	-1.0	-1.7
After Firing to 2500°F	-0.6	-1.4	-0.4	-1.4
After Firing to 3000°F	+0.6	+3.7	+3.0	+1.8
Modulus of Rupture, Ib/in <sup>2</sup>				
After Firing to 230°F	315	550	340	400
After Firing to 1500°F	255	500	350	300
After Firing to 2000°F	415	400	340	300
After Firing to 2500°F	700	600	450	300
After Firing to 3000°F	1700	725	625	400
Cold Crushing Strength, Ib/in <sup>2</sup>				
After Firing to 230°F		1300	<u>114</u> 5	700
After Firing to 1500°F		2200	22	1000
After Firing to 2000°F	-	1800	203	1000
After Firing to 2500°F	2.	1700	225	1100
After Firing to 3000°F			75. 12	1050

The data given above are based on a small number of test specimens made under very controlled conditions in the laboratory and are determined by standard A.S.T.M. procedures where applicable. Variation from the above data may occur in individual tests and in large scale plant production. These results cannot be taken as minima or maxima for specification purposes.

Notice: All statements, information, and data given herein are believed to be accurate and reliable but are presented without guarantee, warranty, or responsibility of any kind, expressed or implied. Statements or suggestions concerning possible use of our products are made without representation or warranty that any such use is free of patent infringement, and are not recommendations to infringe any patent. The user should not assume that all safety measures are indicated or that other measures may not be required.

## A. P. GREEN INDUSTRIES, INC.

## TECHNICAL DATA

PRODUCT NAME

G-26

#### NOTE

The test data shown are based on average results of control tests and are subject to normal variation on individual tests. Accordingly, test data cannot be taken as establishing maximum or minimum specifications. Sample averages would be expected to meet a unilateral limit for each property 90% of the time.

#### PRODUCT DESCRIPTION/APPLICATION

G-26 is an insulating brick for temperatures up to 2600°F. In many furnaces operating in this range, they can be used in direct contact with flame. They feature light weight, low thermal conductivity, and good structural strength. Ideal as back-up brick behind regular refractory brick.

#### CHEMICAL ANALYSIS

Silica - SiO2	51.0 - 55.0%
Alumina - Al <sub>2</sub> O <sub>3</sub>	
Iron Oxide - Fe <sub>2</sub> O <sub>3</sub>	
Lime - CaO	
Magnesia - MgO	
Titania - TiO2	1.5 - 2.5%
Alkalies - Na <sub>2</sub> O + K <sub>2</sub> O	1.0 - 2.0%

#### (PHYSICAL PROPERTIES on reverse side)

# A. P. GREEN INDUSTRIES, INC. PHYSICAL PROPERTIES

MAXIMUM RECOMMENDED TEMPERATURE	E2600°F	1425°C
REHEAT (Permanent Linear Change) - ASTM C210	0	
Contraction or Expansion at 2550°F (1400°C)		0% contr
	lb/ft <sup>3</sup>	g/cm <sup>3</sup>
BULK DENSITY - ASTM C134	48 - 54	0.77 - 0.87
	lb/in <sup>2</sup>	MPa
MODULUS OF RUPTURE - ASTM C93	100 - 175	0.7 - 1.2
COLD CRUSHING STRENGTH - ASTM C93	100 - 200	0.7 - 1.4
THERMAL CONDUCTIVITY	Btu/in	W/m°C
At a mean temperature of	ft <sup>2</sup> hr°F	
400°F (205°C)	1.8	0.26
800°F (425°C)		0.29
1200°F (650°C)		0.32
1600°F (870°C)		0.36
2000°F (1095°Ć)		0.40

July 19, 1989

A. P. GREEN INDUSTRIES, INC. MEXICO, MISSOURI 65265 U.S.A. Telephone: (314) 473-3626



# A. P. GREEN INDUSTRIES, INC.

# TECHNICAL DATA

#### PRODUCT NAME

G-23

#### NOTE

The test data shown are based on average results of control tests and are subject to normal variation on individual tests. Accordingly, test data cannot be taken as establishing maximum or minimum specifications. Sample averages would be expected to meet a unilateral limit for each property 90% of the time.

#### PRODUCT DESCRIPTION/APPLICATION

G-23 is an insulating brick for temperatures up to 2300°F. In many furnaces operating in this range, they can be used in direct contact with flame. They feature light weight, low thermal conductivity, and good structural strength. Ideal as back-up brick behind regular refractory brick.

#### CHEMICAL ANALYSIS

Silica - SiO <sub>2</sub>	50.0 -	- 54.0%
Alumina - Al <sub>2</sub> O <sub>3</sub>	41.0 -	45.0%
Iron Oxide - Fe <sub>2</sub> O <sub>3</sub>	1.0 -	- 2.0%
Lime - CaO	0.3 -	- 1.0%
Magnesia - MgO	0.1 -	- 0.6%
Titania - TiO2		
Alkalies - Na <sub>2</sub> O + K <sub>2</sub> O	0.5 -	- 1.5%

#### (PHYSICAL PROPERTIES on reverse side)

# A. P. GREEN INDUSTRIES, INC. PHYSICAL PROPERTIES

MAXIMUM RECOMMENDED TEMPERATURE REHEAT (Permanent Linear Change) - ASTM C210	2300°F	1260°C
Contraction or Expansion at 2250°F (1230°C)	0 - 0	.5% contr
	lb/ft <sup>3</sup>	g/cm <sup>3</sup>
BULK DENSITY - ASTM C134	45 - 51	0.72 - 0.82
	lb/in2	MPa
MODULUS OF RUPTURE - ASTM C93	80 - 140	0.6 - 1.0
COLD CRUSHING STRENGTH - ASTM C93		0.7 - 1.2
THERMAL CONDUCTIVITY	Btu/in	W/m°C
At a mean temperature of	ft2hr°F	
400°F (205°C)	1.7	0.25
800°F (425°C)		0.27
1200°F (650°C)		0.32
1600°F (870°C)		0.36
2000°F (1095°C)		0.40

July 19, 1989

A. P. GREEN INDUSTRIES, INC. MEXICO, MISSOURI 65265 U.S.A. Telephone: (314) 473-3626



# 'SAIRSET®

Wet, High Strength, High Temperature Bonding Mortar

'SAIRSET is a wet, high strength, air-setting, high temperature mortar. This product was formulated for troweled mortar joints in brick linings. For dipping consistency, water must be added to the pail. This mortar is used to lay high duty, super duty, high fired super duty, and 50% alumina firebrick. Its maximum operating temperature is 3000°F.

#### CHEMICAL ANALYSIS - Calcined Basis

Silica - SiO <sub>2</sub>	58.0	-	62.0%
Alumina - Al <sub>2</sub> O <sub>3</sub>	31.0	-	35.0%
Iron Oxide - Fe <sub>2</sub> O <sub>3</sub>	1.0	-	1.7%
Lime - CaO	0.1	-	0.4%
Magnesia - MgO			
Titania - TiO <sub>2</sub>			
Alkalies - $Na_2O + K_2O$	2.5	-	3.2%

A. P. Green is a supplier of high duty and super duty brick, insulating firebrick, high alumina brick, mortars, plastics and castables, as well as mineral wool block insulation and a complete ceramic fiber product line. Stocks of these products are maintained in more than 60 locations throughout North America. And, having been in the refractories business for more than 80 years, A. P. Green can also provide the expertise and thorough technical assistance that you might require.





MAXIMUM RECOMMENDED TEMPERATURE	3000°F	1650°C
REFRACTORINESS TEST - ASTM C199 2910°F (1600°C) Test Temperature	No Softening	g or Flowing
QUANTITY REQUIRED TO LAY 1,000 9x4½x2½" (229x114x63 mm) BRICK		
Dipping Consistency	350 - 400 lb	159 - 181 kg
WATER REQUIRED FOR TEMPERING	Approx	imately
Volume per 100 pounds (45.4 kg) For Laying Brick	Gal (U.S.)	Liters
Troweling Consistency	1/4	0.9
Dipping Consistency	11/4	4.7
MODULUS OF RUPTURE - ASTM C198 On KX-99 Brick with Ends Bonded Together		
Using Mortar in Troweling Consistency	lb/in <sup>2</sup>	MPa
Dried at 220°F (105°C)	400 - 900	2.8 - 6.2
Heated at 1500°F (815°C) and Then Cooled	200 - 650	1.4 - 4.5
WATER RETENTION		
A.R.I. Technical Bulletin No. 60	14 Minutes	
PARTICLE SIZE - ASTM C92		
Maximum Retained on 20 Mesh (0.83 mm opening)	0.	5%
Maximum Retained on 35 Mesh (0.42 mm opening)	5.0	0%

The test data shown are based on average results of control tests and are subject to normal variation on individual tests. Accordingly, test data cannot be taken as establishing maximum or minimum specifications. Sample averages would be expected to meet a unilateral limit for each property 90% of the time.



# SUPER G® and SUPER G® Plus

High Alumina, Plastic Refractory

SUPER G is a 50% alumina, heat-set plastic. It exhibits excellent resistance to thermal shock from rapid heating or cooling furnace conditions. It is very volume stable at high furnace operating conditions.

Typical applications are aluminum furnace upper sidewall and roof regions, burner blocks, rotary kiln feed and discharge hoods, combustion chambers, boilers, forge furnace sidewall and roof regions, and zinc furnace upper sidewalls.

SUPER G Plus is the fast fire-in version of SUPER G.

#### CHEMICAL ANALYSIS - Calcined Basis

Silica - SiO <sub>2</sub>	43.9%
Alumina - Al <sub>2</sub> O <sub>3</sub>	
Iron Oxide - Fe <sub>2</sub> O <sub>3</sub>	1.4%
Lime - CaO	
Magnesia - MgO	
Titania - TiO <sub>2</sub>	2.7%
Alkalies - $Na_2O + K_2O$	0.6%

A. P. Green is a supplier of high duty and super duty brick, insulating firebrick, high alumina brick, mortars, plastics and castables, as well as mineral wool block insulation and a complete ceramic fiber product line. Stocks of these products are maintained in more than 60 locations throughout North America. And, having been in the refractories business for more than 80 years, A. P. Green can also provide the expertise and thorough technical assistance that you might require.



# **SUPER G® and SUPER G® Plus\***

*TECHNICAL DATA* 

	CASE VALUE OF	ssed -/3	
	lb/ft³	g/cm <sup>3</sup>	
QUANTITY REQUIRED - Net	151	2.42	
DRYING AND FIRING SHRINKAGE - ASTM C179  Shrinkage or Expansion - Percent of Original Length			
Dried at 220°F (105°C)	0.8%	shr.	
Heated at 1500°F (815°C) and Then Cooled		shr.	
Heated at 2000°F (1095°C) and Then Cooled		shr.	
Heated at 2550°F (1400°C) and Then Cooled		exp.	
Heated at 2910°F (1600°C) and Then Cooled		exp.	
MODULUS OF RUPTURE - ASTM C133	lb/ln²	MPa	
Dried at 220°F (105°C)	180	1.2	
Heated at 1500°F (815°C) and Then Cooled	180	1.2	
Heated at 2000°F (1095°C) and Then Cooled	400	2.8	
Heated at 2550°F (1400°C) and Then Cooled	450	3.1	
PARTICLE SIZE - ASTM C92			
Retained on 31/2 Mesh Tyler Screen (5.6 mm opening)			
Wet Analysis	Less T	han 8%	
THERMAL CONDUCTIVITY	Btu-in		
At a Mean Temperature of	ft2hr°F	W/m°C	
400°F (205°C)	4.0	0.58	
800°F (425°C)	4.5	0.65	
1200°F (650°C)	4.9	0.71	
1600°F (870°C)	6.0	0.86	
2000°F (1095°C)	7.3	1.05	

The test data shown are based on average results on production samples and are subject to normal variation on individual tests. Accordingly, test data cannot be taken as establishing maximum or minimum specifications.

<sup>\*</sup> NOTE: SUPER G Plus will typically show 1-3 lb/ft³ lower density and up to 15% lower strength values.



## A. P. GREEN INDUSTRIES, INC.

# TECHNICAL DATA

PRODUCT NAME

# **SUPER H**

#### NOTE

The test data shown are based on average results of control tests and are subject to normal variation on individual tests. These results <u>cannot</u> be taken as maximum or minimum requirements for specification purposes.

#### PRODUCT DESCRIPTION/APPLICATION

SUPER-H is a super duty plastic formulated for long service in steel mill furnaces where high temperatures and severe spalling is present. Has proved economical in slab and billet heating furnaces, soaking pit covers and walls, rotary hearth furnaces, forge furnaces and other steel mill aplications.

#### CHEMICAL ANALYSIS

# CHEMICAL ANALYSIS Silica - SiO2 44.0 - 48.0% Alumina - Al<sub>2</sub>O3 47.0 - 51.0% Iron Oxide - Fe<sub>2</sub>O3 1.0 - 2.0% Lime - CaO 0.1 - 0.3% Magnesia - MgO 0.1 - 0.3% Titania - TiO2 2.0 - 3.0% Alkalies - Na<sub>2</sub>O + K<sub>2</sub>O 0.5 - 1.0%

#### (PHYSICAL PROPERTIES on reverse side)

# A. P. GREEN INDUSTRIES, INC.

#### PHYSICAL PROPERTIES

#### SUPER H

Super Duty, Plastic Refractory

	lb/ft <sup>3</sup>	g/cm <sup>3</sup>
QUANTITY REQUIRED - Net	147	2.36
DRYING AND FIRING SHRINKAGE - ASTM C179		
Shrinkage or Expansion - Percent of Original Length		
Dried at 220°F (105°C)	0.3 - 1.0	0% shr
Heated at 2550°F (1400°C) and Then Cooled		
Heated at 2910°F (1600°C) and Then Cooled	0 - 2.19	% exp
MODULUS OF RUPTURE - ASTM C491	lb/in <sup>2</sup>	MPa
Dried at 220°F (105°C)		0.7 - 1.7
Heated at 1500°F (815°C) and Then Cooled		0.7 - 1.4
Heated at 2550°F (1400°C) and Then Cooled	250 - 500	1.7 - 3.4
THERMAL CONDUCTIVITY	Btu/in	
At a mean temperature of	ft <sup>2</sup> hr°F	W/m°C
800°F (425°C)	4.5	0.65
1200°F (650°C)	5.2	0.75
1600°F (870°C)	6.0	0.87
2000°F (1095°C)	7.0	1.01

December 4, 1990

AP GREEN REFRACTORIES

A. P. GREEN INDUSTRIES, INC. GREEN BOULEVARD MEXICO, MISSOURI 65265 U.S.A.

Telephone: (314) 473-3626

# SUPER HYBOND® and SUPER HYBOND® Plus

High Strength, Super Duty, Plastic Refractory

SUPER HYBOND is a super duty fireclay, air-set plastic. It exhibits excellent resistance to thermal shock from rapid heating or cooling furnace conditions. It is very volume stable at high furnace operating conditions. It also exhibits moderate strength to resist intermittent mechanical abuse.

Typical applications are burner blocks, rotary kiln feed and discharge hoods, combustion chambers, boilers, forge furnace sidewall and roof regions, gypsum kettle settings, dryers, and door jambs.

SUPER HYBOND Plus is the fast fire-in version of SUPER HYBOND.

#### CHEMICAL ANALYSIS - Calcined Basis

Silica - SiO <sub>2</sub>	49.9%
Alumina - Al <sub>2</sub> O <sub>3</sub>	44.0%
Iron Oxide - Fe <sub>2</sub> O <sub>3</sub>	1.4%
ime - CaO	0.5%
Magnesia - MgO	0.3%
Titania - TiO <sub>2</sub>	2.7%
Alkalies - $Na_2O + K_2O$	1.2%

A. P. Green is a supplier of high duty and super duty brick, insulating firebrick, high alumina brick, mortars, plastics and castables, as well as mineral wool block insulation and a complete ceramic fiber product line. Stocks of these products are maintained in more than 60 locations throughout North America. And, having been in the refractories business for more than 80 years, A. P. Green can also provide the expertise and thorough technical assistance that you might require.



# **SUPER HYBOND® and SUPER HYBOND® Plus\***

**TECHNICAL DATA** 

	lb/ft³	Pressed g/cm <sup>3</sup>
OHANESS PROMISES N		The second secon
QUANTITY REQUIRED - Net	146	2.34
Shrinkage or Expansion - Percent of Original Length Dried at 220°F (105°C) Heated at 1500°F (815°C) and Then Cooled Heated at 2000°F (1095°C) and Then Cooled Heated at 2550°F (1400°C) and Then Cooled Heated at 2910°F (1600°C) and Then Cooled	(	0.7% shr. 0.8% shr. 1.1% shr. 0.7% exp. 3.0% exp.
MODULUS OF RUPTURE - ASTM C133  Dried at 220°F (105°C)  Heated at 1500°F (815°C) and Then Cooled  Heated at 2000°F (1095°C) and Then Cooled	280 250 440	MPa 1.9 1.7 3.1
Heated at 2550°F (1400°C) and Then Cooled	600	4.1
PARTICLE SIZE - ASTM C92  Retained on 4 Mesh Tyler Screen (4.7 mm opening)  Wet Analysis	Les	ss Than 10%
THERMAL CONDUCTIVITY	Btu-in	
At a Mean Temperature of	ft2hr°F	W/m°C
400°F (205°C)	4.0	0.58
800°F (425°C)	4.5	0.65
1200°F (650°C)	4.9	0.71
1600°F (870°C)	5.8	0.84
2000°F (1095°C)	7.3	1.05

The test data shown are based on average results on production samples and are subject to normal variation on individual tests. Accordingly, test data cannot be taken as establishing maximum or minimum specifications.

\* NOTE: SUPER HYBOND Plus will typically show 1-3 lb/ft3 lower density and up to 15% lower strength values.





#### HARBISON-WALKER REFRACTORIES

Dresser Industries, Inc.

One Gateway Center, Pittsburgh, PA 15222

#### UFALA

Classification: High-Alumina Brick

Physical Data: (Typical)	Englis	h Units	SI	<u>Units</u>
	1b/	ft3		cg/m <sup>3</sup>
Bulk Density	154 t	0 161	2,470	to 2,580
Apparent Porosity, %	12.0 t	0 16.0	12.0	to 16.0
	<u>lb/</u>	in <sup>2</sup>		<u>kPa</u>
Cold Crushing Strength	7,000 t	0 11,000	48,300	to 75,800
Modulus of Rupture	2,000 t	0 4,000	13,800	to 27,600
Reheat Test Permanent Linear Change After Heating at 2910°F	% (1600°C)	0.0	to0.5	
Load Test, 25 psi (172 kPa % Linear Subsidence. After Heating at 2640°F		0.1	to 0.7	
<pre>Chemical Analysis:    (Approximate)</pre>				
Silica	(SiO <sub>2</sub> )		37.1 %	
Alumina	(Al <sub>2</sub> O <sub>3</sub> )		58.7	
Titania	(TiO <sub>2</sub> )		2.4	
Iron Oxide	(Fe <sub>2</sub> O <sub>3</sub> )		1.4	
Lime .	(CaO)		0.1	
Magnesia	(MgO)		0.1	
Alkalies	(Na <sub>2</sub> O+K <sub>2</sub> O+Li <sub>2</sub> )	0)	0.2	

The above data are typical of the properties of commercial 9" straight brick. The data are subject to reasonable variations and should not be used for specification purposes.

ASTM Test Methods, where applicable, used for determination of data.

=== technical data ===



#### HARBISON-WALKER REFRACTORIES

Division of Dresser Industries, Inc.
One Gateway Center, Pittsburgh, Pennsylvania 15222

#### H-W LIGHTWEIGHT CASTABLE 22

Techni	cal	Data:
	Activities and a second	and the second s

Physical Properties: (Typical)	English Units	SI Units
Maximum Service Temperature	2,200°F	1,205°C
	1b/ft3	kg/m <sup>3</sup>
Dry Weight Required for Casting	56	895
Approximate Amount of Water Required Per 50 Lbs. 2½ to Per 22.68 Kg.	3 U.S. Gallons 9.46 t	o 11.36 Liters
Bulk Density After Drying at 230°F (110°C)	1b/ft <sup>3</sup>	kg/m <sup>3</sup> 995
Modulus of Rupture After Drying at 230°F (110°C) After Heating at 1000°F (540°C) After Heating at 1500°F (815°C)	130 to 200 100 to 150	700 to 1,000
After Heating at 2100°F (815°C)	110 to 170 110 to 170	800 to 1,200 800 to 1,200
Cold Crushing Strength After Drying at 230°F (110°C) After Heating at 1000°F (540°C) After Heating at 1500°F (815°C) After Heating at 2100°F (1150°C)	300 to 600 2 300 to 550 2	,400 to 5,500 ,100 to 4,100 ,100 to 3,800 ,700 to 3,100
Permanent Linear Change, % After Drying at 230°F (110°C) After Heating at 1000°F (540°C) After Heating at 1500°F (815°C) After Heating at 2100°F (1150°C)	Negligible -0.2 to -0 -0.3 to -0 -0.5 to -1	.5 .7
Mb = 2 - 1		

#### Thermal Conductivity:

Temperature OF	Btu/hr. ft. 2 °F/in.	Temperature °C	Kcal/hr. m <sup>2</sup> °C/m
500 1000	1.44	400 600	0.190 0.208
1500 2000	1.86 2.18	1000	0.228 0.254

HJ-11

(Continued)



#### H-W LIGHTWEIGHT CASTABLE 22 (Continued)

#### Chemical Analysis: (Calcined Basis) (Approximate)

Silica	(SiO <sub>2</sub> )	34.0%
Alumina	(Al203)	38.5
Titania	(TiO <sub>2</sub> )	2.2
Iron Oxide	(Fe <sub>2</sub> 03)	7.0
Lime	(Ca0)	15.8
Magnesia	(Mg0)	0.5
Alkalies	(Na <sub>2</sub> 0+K <sub>2</sub> 0+Li <sub>2</sub> 0)	2.0

All data based on cast specimens. ASTM procedures, where applicable, used for determination of data.

All data subject to reasonable deviation and therefore should not be used for specification purposes.

Description:

Blended castable employing calcined clays, firm lightweight aggregates and a standard calcium-aluminate binder.

Features:

Lightweight, high insulating value, good refractoriness, good strength, excellent resistance to thermal shock, easily installed by casting or trowelling and may be gunned.

May be used in a wide range of applications.

These include various industrial furnaces,
boilers, incinerators, stacks, etc., and as
back-up for other refractories suitable for
greater mechanical abuse and higher temperatures.

Shipping Data: Shipped in multi-wall moisture-proof sacks of 50 Lbs. (22.68 Kg.) net weight.



#### North American Refractories Co.

WESTERN DIVISION



BRAND: LITECRETE 50

ASTM CLASS: N & O

APPLICATION: CAST MIX

DESCRIPTION: General purpose low iron insulating castable

conforming to ASTM specifications.

SERVICE DATA: (ASIM C113, C133, C20)

		(After firing t	o stated tempe	rature)	Thermal
Temperature,	°F	Permanent Linear Change,%	Modulus of Rupture, psi	Cold Crushing,psi	Conductivity BTU/in./hr.ft <sup>2</sup> °F
220		0	80-150	350-450	
500		man had soul	80-110	200-300	1.7
1000	3	-0.3	80-100	225-325	1.6
1500		-0.9	90-125	325-375	1.5
2000		-1.2	90-130	350-400	

#### APPLICATION DATA:

Maximum Service Temperature (MST)	( °F)	2,200
Amount Required for Installation	(pcf.)	50-55
Bulk Density - After Drying at 220°F	(pcf.)	55-60
- After Firing to 1500°F	(pcf.)	50-55
Water required for 100 lbs. dry (Approx.)	(wt.%)	50%

#### CHEMICAL DATA:

Alumina (Al <sub>2</sub> O <sub>3</sub> )	41.3	%	Lime (CaO)	11.5	%
Silica (SiO <sub>2</sub> )	43.3	%	Magnesia (MgO)	0.2	76
Titania (TiO2)	1.2	%	Alkalies (Na <sub>2</sub> O, K <sub>2</sub> O)	0.8	%
Ferric Oxide (Fe₂O₃)	0.6	%	L.O.I.	1.1	

# A. P. GREEN INDUSTRIES, INC.

## TECHNICAL DATA

#### PRODUCT NAME

## CASTABLE INSULATION NO. 22 CASTABLE INSULATION NO. 22 Plus

#### NOTE

The test data shown are based on average results of control tests and are subject to normal variation on individual tests. Accordingly, test data cannot be taken as establishing maximum or minimum specifications. Sample averages would be expected to meet a unilateral limit for each property 90% of the time.

#### PRODUCT DESCRIPTION/APPLICATION

CASTABLE INSULATION NO. 22 & Plus are lightweight castables for temperatures to 2200°F. Features low thermal conductivity and good strength for such a lightweight material. Recommended for oil stills and heaters, lightweight panel construction, flue and duct linings, complete monolithic linings, and as a back-up material.

CASTABLE INSULATION NO. 22 Plus contains an added ingredient which provides a fast fire-in capability, reducing the dangers of explosive spalling.

#### CHEMICAL ANALYSIS

Silica - SiO2	32. 0 - 36.0%
Alumina - Al <sub>2</sub> O <sub>3</sub>	39.0 - 43.0%
Iron Oxide - Fe <sub>2</sub> O <sub>3</sub>	
Lime - CaO	16.0 - 18.0%
Magnesia - MgO	0.2 - 0.7%
Titania - TiO2	
Alkalies - Na <sub>2</sub> O + K <sub>2</sub> O	1.0 - 2.0%

#### (PHYSICAL PROPERTIES on reverse side)

# A. P. GREEN INDUSTRIES, INC. PHYSICAL PROPERTIES

#### CASTABLE INSULATION NO. 22 CASTABLE INSULATION NO. 22 Plus

2200°F, Insulating, Refractory Castable

MAXIMUM RECOMMENDED TEMPERATURE		1205°C
and the second s	lb/ft <sup>2</sup>	g/cm <sup>2</sup>
QUANTITY REQUIRED	53	.85
QUANTITY IN PLACE		
Cured and then Dried at 220°F (105°C)	50 - 62	0.80 - 0.9
Heated at 1500°F (815°C)	48 - 58	0.77 - 0.9
WATER REQUIRED FOR MIXING		roximately
Weight % Dry Solids		50.2%
Per 100 Pounds (45.4 kg)	6 gal (US)	22.7 liter
MAXIMUM TIME FROM ADDING WATER TO PLACING M	ATERIAL	
Minutes	***********	20
PERMANENT LINEAR CHANGE - ASTM C113 AND C865		
Expansion or Shrinkage		
Cured and Then Dried at 220°F (105°C)		Nil
Heated at 1000°F (540°C) and Then Cooled		- 0.7% shr
Heated at 1500°F (815°C) and Then Cooled	0.5	- 1.1% shr
Heated at 2000°F (1095°C) and Then Cooled		- 1.5% shr
Heated at 2100°F (1150°C) and Then Cooled	0.8	- 1.5% shr
MODULUS OF RUPTURE - ASTM C133 AND C865	lb/in <sup>2</sup>	MPa
Cured and Then Dried at 220°F (105°C)	80 - 200	0.55 - 1.3
Heated at 1000°F (540°C) and Then Cooled	50 - 150	0.34 - 1.0
Heated at 1500°F (815°C) and Then Cooled		0.38 - 1.1
Heated at 2000°F (1095°C) and Then Cooled		0.21 - 1.0
COLD CRUSHING STRENGTH - ASTM C133 AND C865		
Cured and Then Dried at 220°F (105°C)	375 - 700	2.58 - 4.8
Heated at 1000°F (540°C) and Then Cooled	225 - 600	1.55 - 4.1
Heated at 1500°F (815°C) and Then Cooled	275 - 675	1.90 - 4.6
Heated at 2000°F (1095°C) and Then Cooled		0.76 - 2.9
PARTICLE SIZE - ASTM C92		
Retained on 10 Mesh Tyler Screen (1.65 mm opening)		
Dry Analysis	Les	s Than 3%
THERMAL CONDUCTIVITY	Btu-in	W/m°C
At a Mean Temperature of	ft2hr°F	(304-77-340-77-0
400°F (205°C)	1.70	0.25
800°F (425°C)		0.26
1200°F (650°C)		0.29
1600°F (870°C)		0.33
December 20, 1990		

A. P. GREEN INDUSTRIES, INC. MEXICO, MISSOURI 65265 U.S.A. Telephone: (314) 473-3626



#### TECHNICAL DATA

#### A. P. GREEN INSULATING CEMENT

#### Mineral Wool, Insulating Cement

MAXIMUM RECOMMENDED TEMPERATURE	1700°F	930°C
QUANTITY REQUIRED - Net One Inch (25 mm) Dried Thickness	2.5 lb/ft <sup>2</sup>	12.2 kg/m <sup>2</sup>
WATER REQUIRED FOR MIXING	Appro	ximately
Per 50 Pounds (22.7 kg)	ll gal (US)	42 litters
COMPRESSIVE STRENGTH - ASTM C354	lb/in <sup>2</sup>	kg/cm <sup>2</sup>
10% Deformation	32 - 36	2.2 - 2.5
CORROSION		tor prevents rust of iron and steel
RECLAIMABILITY		
100% Reclaimability up to	250°F	120°C
COLOR AFTER DRYING	Grayish-	White
THERMAL CONDUCTIVITY		
at a Mean Temperature of	Btu-in ft hr°F	kgal-m m hr°C
200°F (95°C)	0.54	0.067
400°F (205°C)	0.71	0.088
600°F (315°C)	0.87	0.108
800°F (425°)	1.04	0.129
1000°F (540°)	1.20	0.149

Contains no asbestos

The test data shown above are based on average results of control tests and are subject to normal variation on individual tests. These results cannot be taken as maximum or minimum requirements for specification purposes.

# GREENPAK-85-P and GREENPAK-85-P Plus

High Alumina, Phosphate Bonded, Plastic Refractory

GREENPAK-85-P is a high alumina, phosphate bonded plastic with excellent strength, outstanding slag resistance, good workability, and volume stability at high temperatures. It demonstrates good resistance to alkali attack. Typical applications are incinerator linings including afterburners, aluminum holding furnace sidewalls and ramps, steel mill maintenance linings, ladle linings holding iron, carbon steel, aluminum, brass, bronze, and zinc, burner blocks, and soaking pit slaglines.

GREENPAK-85-P Plus is the fast fire-in version of GREENPAK-85-P.

#### CHEMICAL ANALYSIS - Calcined Basis

Silica - SiO <sub>2</sub>	6.7%
Alumina - Al <sub>2</sub> O <sub>3</sub>	
Iron Oxide - Fe <sub>2</sub> O <sub>3</sub>	1.2%
Lime - CaO	0.1%
Magnesia - MgO	
Titania - TiO <sub>2</sub>	2.3%
Alkalies - Na <sub>2</sub> O + K <sub>2</sub> O	0.1%
Phosphorous Pentoxide - P <sub>2</sub> O <sub>5</sub>	4.5%

A. P. Green is a supplier of high duty and super duty brick, insulating firebrick, high alumina brick, mortars, plastics and castables, as well as mineral wool block insulation and a complete ceramic fiber product line. Stocks of these products are maintained in more than 60 locations throughout North America. And, having been in the refractories business for more than 80 years, A. P. Green can also provide the expertise and thorough technical assistance that you might require.



# **GREENPAK-85-P and GREENPAK-85-P Plus\***

ECHNICAL DATA

	Pressed	
	lb/ft <sup>3</sup>	g/cm <sup>3</sup>
QUANTITY REQUIRED - Net	183	2.93
DRYING AND FIRING SHRINKAGE ASTM C179  Shrinkage or Expansion - Percent of Original Length Dried at 220°F (105°C)  Heated at 1500°F (815°C) and Then Cooled Heated at 2550°F (1400°C) and Then Cooled Heated at 3000°F (1650°C) and Then Cooled	0 - 0.7 0.4% shr 0.7% shr 1.5% shr	0.3% exp. 0.7% exp.
MODULUS OF RUPTURE - ASTM C133  Dried at 220°F (105°C)  Heated at 1500°F (815°C) and Then Cooled  Heated at 2550°F (1400°C) and Then Cooled	1b/ln <sup>2</sup> 750 - 1550 1050 - 2000 1150 - 2550	
PARTICLE SIZE - ASTM C92 Retained on 31/2 Mesh Tyler Screen (5.6 mm opening) Wet Analysis	Less Ti	nan 1%
THERMAL CONDUCTIVITY  At a mean temperature of  800°F (425°C)  1200°F (650°C)  1600°F (870°C)  2000°F (1095°C)	Btu/in ft²hr°F 14.7 14.4 14.1 14.5	W/m°C 2.12 2.08 2.03 2.09

The test data shown are based on results of a control tests and are subject to normal variation on individual tests. Accordingly, test data cannot be taken as establishing maximum or minimum specifications. Sample averages would be expected to meet a unilateral limit for each property 90% of the time.

\* NOTE: GREENPAK-85-P Plus will typically show 1-3 lb/ft3 lower density and up to 15% lower strength values.

— (W) — APGreen

September 16, 1992

# A. P. GREEN INDUSTRIES, INC.

# TECHNICAL DATA

PRODUCT NAME

# **GREENPAK-83-MP**

#### NOTE

The test data shown are based on average results of control tests and are subject to normal variation on individual tests. Accordingly, test data cannot be taken as establishing maximum or minimum specifications. Sample averages would be expected to meet a unilateral limit for each property 90% of the time.

#### PRODUCT DESCRIPTION/APPLICATION

GREENPAK-83-MP is a high alumina, phosphate-bonded plastic with excellent strength, outstanding slag resistance, good workability and minimal shrinkage at 3000°F. It has proved an excellent material in many steel mill applications, including ladles, and in aluminum contact applications.

#### CHEMICAL ANALYSIS

HEMICAL ANALYSIS Silica - SiO <sub>2</sub>	9.0 - 13.0%
Alumina - Al <sub>2</sub> O <sub>3</sub>	78.0 - 82.0%
Iron Oxide - Fe <sub>2</sub> O <sub>3</sub>	1.0 - 1.7%
Lime - CaO	0.05 - 0.15%
Magnesia - MgO	0.05 - 0.15%
Titania - TiO2	2.0 - 3.0%
Alkalies - Na <sub>2</sub> O + K <sub>2</sub> O	0.1 - 0.25%
Phosphorous Pentoxide - P2O5	3.0 - 5.0%

# (PHYSICAL PROPERTIES on reverse side)

# A. P. GREEN INDUSTRIES, INC. PHYSICAL PROPERTIES

#### **GREENPAK-83-MP**

High Alumina, Phosphate Bonded, Pl	astic Refractory	
	lb/ft <sup>3</sup>	g/cm <sup>3</sup>
QUANTITY REQUIRED - Net	178	2.85
DRYING AND FIRING SHRINKAGE - ASTM C17	9	
Shrinkage or Expansion - Percent of Original Length		
Dried at 220°F (105°C)	0.8% shr -	0.5% exp
Heated at 1500°F (815°C) and Then Cooled		
Heated at 2550°F (1400°C) and Then Cooled	0.5 - 2.0	% exp
Heated at 3000°F (1650°C) and Then Cooled	0 - 2.59	% exp
MODULUS OF RUPTURE - ASTM C491	lb/in <sup>2</sup>	MPa
Dried at 220°F (105°C)		
Heated at 1500°F (815°C) and Then Cooled	950 - 1650	6.5 - 11.4
Heated at 2550°F (1400°C) and Then Cooled	1000 - 1900	6.9 - 13.1
PARTICLE SIZE - ASTM C92		
Retained on 6 Mesh Tyler Screen (3.33 mm opening)		
Wet Analysis	Less Th	ian 6%
THERMAL CONDUCTIVITY	Btu/in	
At a mean temperature of	ft <sup>2</sup> hr°F	W/m°C
800°F (425°C)	14.7	2.12
1200°F (650°C)	14.4	2.08
1600°F (870°C)	14.1	2.03
2000°F (1095°C)	14.5	2.09

December 4, 1990

A. P. GREEN INDUSTRIES, INC. MEXICO, MISSOURI 65265 U.S.A. Telephone: (314) 473-3626



PROPERTIES	NARPHOS 55 P	NARPHOS 90 P	NARPHOS 70 P	NARPHOS B	NARPHOS 60 P	NARPHOS 85 P	NARPHOS 85 P-AL	NARPHOS 85 TP	NARPHOS 85 PLASTER	NARPHOS 90 TP
Maximum Temperature, °F	3000	3000	3100	3150	3150	3150	3150	3150	3150	3300
Material Required to Install, lb/ft <sup>3</sup>	155	183	169.	170	159	171	171	177	179	182
Abrasion Loss @ 1500°F, cm <sup>3</sup>	-	ber		7	**	5	5	**	**	
Chemical Composition, % by Wt.  SiO <sub>2</sub> Al <sub>2</sub> O <sub>3</sub> Fe <sub>2</sub> O <sub>3</sub> CaO TiO <sub>2</sub> MgO K <sub>2</sub> O Na <sub>2</sub> O P <sub>2</sub> O <sub>5</sub> L.O.I.	37.6 55.0 0.8 0.3 1.5 0.1 <0.3 <0.3	3.0 93.1 0.2 0.3 0.1 0.1 <0.1 <0.1 3.4 2.4	22.4 71.2 1.3 0.1 2.0 0.1 <0.2 <0.2 3.5	12.5 79.0 1.4 0.2 2.7 0.2 <0.4 <0.4 2.7 1.2	32.8 61.3 0.7 0.1 2.3 0.1 <0.2 <0.2 2.1	11.0 80.0 1.1 0.14 2.1 0.14 <0.4 <0.4 2.7	9.6 81.0 1.0 0.2 2.3 0.2 < 0.5 < 0.5 2.0 1.9	7.9 83.2 0.8 0.3 2.0 - <0.4 <0.4 3.7 3.3	8.0 81.3 0.8 0.3 2.0 0.1 <0.4 <0.4 3.7 3.3	3.0 93.0 0.2 0.04 0.02 0.1 <0.1 <0.1 3.0 3.1
Bulk Density, lb/ft <sup>3</sup> After Firing to 230°F  After Firing to 1500°F  After Firing to 2000°F  After Firing to 2500°F  After Firing to 3000°F	148 143 143 143 140	179 174 176 174 175	163 158 158 157 148	170 159 159 153 159	148    147	164 163 163  159	170 170 170  169	168 163 165 162 168	161 156 159 153 158	180 179 179 180 186
Total Linear Change, %  After Firing to 1500°F  After Firing to 2000°F  After Firing to 3000°F  After Firing to 3000°F	-0.3 -0.3 -0.5 +0.4	-0.6 -0.7 -0.7 -0.7	-0.5 -0.6 -0.1 +1.3	-0.6 -0.7 +0.8 +2.4	-0.8  -0.1 -1.3	-0.82 -1.0  +0.08	-0.8 -1.0  -0.2	-0.8 -1.1 -0.7 -1.3	-2.78 -3.22 -1.89 -3.67	-1.2 -1.2 -1.7 -2.1
Apparent Porosity, %  After Firing to 1500°F  After Firing to 2000°F  After Firing to 2500°F  After Firing to 3000°F	-	-	-	-		-	21 21 - 17	-	28 27 29.5 24	1 1 1 1
Modulus of Rupture, lb/in <sup>2</sup> After Firing to 230°F After Firing to 1500°F After Firing to 2000°F After Firing to 2500°F After Firing to 3000°F	900 700 1100 1600 2100	1100 900 2000 2200 2600	1200 600 900 1500 3100	600 820 1170 1050 2380	960 975  1190 1650	1520  1620	1100 2500 2800  3000	1400 1000 1600 2000 2300	2050 1660 3260 2260 2430	1650 1900 2300 3950 5300
Hot Modulus of Rupture, lb/in <sup>2</sup> @ 1000°F @ 1500°F @ 2000°F @ 2500°F	1400 2300 900 600	2300 3100 1400 1000	1700 2100 900 700	1720 1980 610 490	-	2240 2740 720 200	2900 2800 1500	2600 3000 900	2055 3240 1080	3000 3400 1200 900
Cold Crushing Strength, lb/in <sup>2</sup> After Firing to 230°F After Firing to 1500°F After Firing to 2000°F After Firing to 2500°F After Firing to 3000°F	2200 1600 3700 3100 8600	1700 3000 5800 6600 6900	1900 3400 4500 5700 7600	1210 2470 3280 3080 4070	3750 5780  3350 7500	2370 5070 7100  5050	1800 7000 6700  8800	2300 3400 7100 6300 13000	2035 3775 7075 4875 14920	3200 7000 9500 10100

The data given above are based on a small number of test specimens made under very controlled conditions in the laboratory and are determined by standard A.S.T.M. procedures where applicable. Variation from the above data may occur in individual tests and in large scale plant production. These results cannot be taken as minima or maxima for specification purposes.

Notice: All statements, information, and data given herein are believed to be accurate and reliable but are presented without guarantee, warranty, or responsibility of any kind, expressed or implied. Statements or suggestions concerning possible use of our products are made without representation or warranty that any such use is free of patent infringement, and are not recommendations to infringe any patent. The user should not assume that all safety measures are indicated or that other measures may not be required.



#### VERSAFLOW™ 45 ADTECH™

#### DESCRIPTION:

Fireclay based low cement castable for use in high abrasion environments up to 2800°F.

#### PRINCIPAL APPLICATIONS:

Iron and Steel Foundries - Reheat furnaces, forge furnace car decks.

Minerals Processing Rotary Kilns - Lifters, feed-end and chain sections, cooler walls.

Chemical Processing Industry - Boiler applications, incineration(ash hoppers).

Aluminum - Flue caps, precast shapes for carbon bake furnaces, subhearths and lower sidewall back-up castable.

#### FEATURES:

- Better abrasion resistance than conventional extra-strength castables or fireclay plastics.
- Easy to install by vibcasting and conventional casting techniques. Can be pumped for large installations.
- Service temperature limit of 2800°F
- Good volume stability resulting in less shrinkage cracking in service.

#### **Typical Property Comparisons**

	Typical Low Cement 45% Al <sub>2</sub> O <sub>3</sub>	VERSAFLOW™45 ADTECH™	VERSAFLOW™ 45 ADTECH™
Density, pcf	141	146	144
MOR, after 230°F, psi	1,400	1,620	1,410
Hot MOR @ 2000°F, psi	1,200	1,950	1,320
Water content, %	6.0	5.5	6.5
Consistency	vibcast	vibcast	conv. casting

Research Data



HARBISON WALKER REFRACTORIES
Division of INDRESCO Inc.
One Gateway Center, Pittsburgh, PA 15222





Maximum Service Ter	mperature	28	00°F
Installation Method		VIBCASTING	CONV. CASTING/ PUMPING
Dry Weight Required Casting, lb/ft <sup>3</sup>	For	139	135
Approximate Amount Required per 55# Sac		3 to 31/4	3½ to 3¾
Bulk Density, lb/ft3		143	139
Modulus of Rupture, II After Drying a		1,580	1,350
After Heating	at 1500°F	1,750	1,440
At 2000°F		2,220	1,690
Crushing Strength, lb/ After Drying a		16,760	12,630
After Heating	at 1500°F	13,200	8,500
Permanent Linear Ch After Drying a		Negligible	Negligible
After Heating	at 1500°F	-0.2	-0.2
After Heating	at 2700°F	+0.7	+0.7
Chemical Analysis: (A (Calcined Basis)	(SiO <sub>2</sub> )	49	9.7
Alumina	(Al <sub>2</sub> O <sub>3</sub> )	4	4.5
Titania	(TiO <sub>2</sub> )		2.2
Iron Oxide	(Fe <sub>2</sub> O <sub>3</sub> )		0.7
Lime	(CaO)	3	2.2
Magnesia	(MgO)	N.	0.2
Alkalies	(N,O+K,O)	1	0.5

All data are based on mechanical mixing and cast specimens. ASTM procedures, where applicable, used for determination of data. All data are subject to reasonable variation and should not be used for specification purposes.

WARNING: IF PROPER PROCEDURES FOR PREPARATION, APPLICATION AND HEAT-UP OF THIS MATERIAL ARE NOT OBSERVED, STEAM SPALLING DURING HEAT-UP MAY OCCUR.



#### VERSAFLOW™ 60 ADTECH™

#### DESCRIPTION:

A 60% Alumina low cement castable based on Alabama bauxitic calcines which can be installed in several ways - from vibcast consistency to pump casting techniques.

#### PRINCIPAL APPLICATIONS:

Iron and Steel Foundries - Replacing brick, plastics and other castables in foundry ladles, Forge furnace car decks.

Ceramic Kilns - Car decks exposed to high temperatures and thermal cycling.

Aluminum Furnaces - Upper sidewalls and roofs.

Steel Industry - Ladle covers, tundish covers, tundish safety lining and precast shapes for tundishes.

Rotary Kilns - Nose rings, lifters, firing hoods, coolers and preheater maintenance. Incineration - Charging zones, burners, rotary kilns.

#### FEATURES:

- Excellent abrasion resistance
- High hot strengths at 2500°F
- High retractoriness
- Service temperature limit of 3100°F
- Installation versatility enables material to be vibcast, conventionally cast or pumped with slight adjustment to water content.

#### **Typical Property Comparisons**

	Typical Low Cement 60% Al <sub>2</sub> O <sub>3</sub>	VERSAFLOW™ 60 ADTECH™	VERSAFLOW™ 60 ADTECH™
Density, pcf	155	156	155
MOR, after 230°F, psi	1,800	2,200	1,920
Hot MOR @ 2500°F, psi	200	570	350
Water content, %	6.0	5.5	6.5
Consistency	vibcast	vibcast	conv. casting

Research Data



HARBISON WALKER REFRACTORIES
Division of INDRESCO Inc.
One Gateway Center, Pittsburgh, PA 15222

INDRESCO

© Copyright 1993 INDRESCO Inc.



Maximum Service Ter	mperature	310	00°F
Installation Method		VIBCASTING	CONV. CASTING/ PUMPING
Dry Weight Required Casting, lb/ft <sup>3</sup>	For Casting	149	145
Approximate Amount Required per 55# Sac		2¾ to 3	31/4 to 31/2
Bulk Density, lb/ft3		152	148
Modulus of Rupture, I After Drying a		1,690	1,520
After Heating	at 1500°F	2,550	1,950
At 2500°F		550	1999
Crushing Strength, lb/ After Drying a		16,750	15,900
After Heating	at 1500°F	13,200	12,400
Permanent Linear Ch After Drying a		Negligible	Negligible
After Heating	at 1500°F	-0.2	-0.3
After Heating	at 3000°F	-0.7	-0.7
Chemical Analysis: (A (Calcined Basis)	Approximate)		
Silica	(SiO <sub>2</sub> )	3	5.0
Alumina	(Al <sub>2</sub> O <sub>3</sub> )	59	9.5
Titania	(TiO <sub>2</sub> )		2.1
Iron Oxide	(Fe <sub>2</sub> O <sub>3</sub> )	2	1.0
Lime	(CaO)		2.1
Magnesia	(MgO)		0.1
Alkalies	(Na,O+K,O)		0.2

All data are based on mechanical mixing and cast specimens. ASTM procedures, where applicable, used for determination of data. All data are subject to reasonable variation and should not be used for specification purposes.

WARNING: IF PROPER PROCEDURES FOR PREPARATION, APPLICATION AND HEAT-UP OF THIS MATERIAL ARE NOT OBSERVED, STEAM SPALLING DURING HEAT-UP MAY OCCUR.





#### VERSAFLOW™ 65/AL ADTECH™

#### DESCRIPTION:

A 65% Alumina low cement castable designed specifically for aluminum metal contact applications. Contains AL inhibitor for increased metal penetration resistance and has high hot strength at 1500°F.

#### PRINCIPAL APPLICATIONS:

Aluminum - Metal contact applications including lower sidewalls and hearths, ramps, door sills/jambs, troughs and transport crucibles, diecast furnaces.

#### FEATURES:

- · High hot strength at 1500°F.
- · Excellent resistance to metal penetration.
- Exceptional non-wetting characteristics.
- Installation versatility enables material to be vibcast, conventionally cast or pumped with slight adjustment to water content.
- Aluminum penetration resistance is excellent compared to other "AL" castables.
- 72 Hour Aluminum Cup Test Results Using 7075 Alloy at 1500°F

Metal Adherence: WEAK Metal Penetration: NONE

#### Hot Strengths of Aluminum Penetration Resistant Castables

	VERSAFLOW™ 65/AL ADTECH™	ALCOR® CASTABLE 60	ALUSA® CASTABLE AL
Hot Strength (MOR)			
@1500°F, psi	4,100*	2,500	1,200
Water Content,%	5.5	6.0	8.0
Consistency	vibcast	vibcast	conv. casting

Research Data

<sup>\*</sup> Outside independent test results



HARBISON WALKER REFRACTORIES Division of INDRESCO Inc. One Gateway Center, Pittsburgh, PA 15222





Maximum Service Ter	mperature	260	00°F
Installation Method		VIBCASTING	CONV. CASTING/ PUMPING
Dry Weight Required Casting, lb/ft <sup>3</sup>	For	156	154
Approximate Amount Required per 55# Sac		2¾ to 3	31/4 to 31/2
Bulk Density, lb/ft3		161	158
Modulus of Rupture, I After Drying a		1,800	1,540
After Heating	at 1500°F	3,300	2,500
At 1500°F		3,700	
Crushing Strength, lb. After Drying a		17,900	16,400
After Heating	at 1500°F	17,400	11,500
Permanent Linear Ch After Drying a		Negligible	Negligible
After Heating	at 1500°F	-0.2	-0.3
After Heating	at 2500°F	+0.9	+0.9
Chemical Analysis: (A (Calcined Basis)	Approximate)		
Silica	(SiO <sub>2</sub> )	2	9.4
Alumina	(Al <sub>2</sub> O <sub>3</sub> )	6	4.2
Titania	(TiO <sub>2</sub> )		2.1
Iron Oxide	(Fe <sub>2</sub> O <sub>3</sub> )		0.8
Lime	(CaO)		3.2
Magnesia	(MgO)		0.1
Alkalies	(Na,O+K,O)		0.2

All data are based on mechanical mixing and cast specimens. ASTM procedures, where applicable, used for determination of data. All data are subject to reasonable variation and should not be used for specification purposes.

WARNING: IF PROPER PROCEDURES FOR PREPARATION, APPLICATION AND HEAT-UP OF THIS MATERIAL ARE NOT OBSERVED, STEAM SPALLING DURING HEAT-UP MAY OCCUR.

3/93: 536151



# **GREENKLEEN-60 Plus**

Aluminum Non-Wetting, Vibratable Castable

GREENKLEEN-60 Plus is a 60% alumina, vibratable, low cement castable specially formulated for aluminum contact. It is non-wetting to aluminum, and features outstanding strengths, abrasion resistance, and superior thermal shock characteristics.

GREENKLEEN-60 Plus contains special additives which enable it to be fired more quickly than regular castables.

#### CHEMICAL ANALYSIS - Calcined Basis

Silica - SiO <sub>2</sub>	30.5	-	34.5%
Alumina - Al <sub>2</sub> O <sub>3</sub>	58.0	-	62.0%
Iron Oxide - Fe <sub>2</sub> O <sub>3</sub>			
Lime - CaO			
Magnesia - MgO	0.0	-	0.1%
Titania - TiO <sub>2</sub>			
Alkalies - $Na_2O + K_2O$	0.2	-	0.5%

A. P. Green is a supplier of high duty and super duty brick, insulating firebrick, high alumina brick, mortars, plastics and castables, as well as mineral wool block insulation and a complete ceramic fiber product line. Stocks of these products are maintained in more than 60 locations throughout North America. And, having been in the refractories business for more than 80 years, A. P. Green can also provide the expertise and thorough technical assistance that you might require.



# GREENKLEEN-60 Plus

MAXIMUM RECOMMENDED TEMPERATURE	3000°F	1650°C	
OR ALUMINUM CONTACT	2200°F	1205°C	3
QUANTITY REQUIRED	157 lb/ft <sup>3</sup>	2.52 g/cm <sup>3</sup>	
QUANTITY IN PLACE	lb/ft³	g/cm <sup>3</sup>	
Cured and Then Dried at 220°F (105°C)	160	2.56	
Heated at 1500°F (815°C)	157	2.52	
WATER REQUIRED FOR MIXING	Approxi	mately	
Weight % Dry Solids	5.5		
Per 100 Pounds (45.4 kg)	51/4 pts (U.S.)	2.5 liters	
MAXIMUM TIME FROM ADDING WATER TO PLACING MATERIAL			
Minutes	20	)	
PERMANENT LINEAR CHANGE - ASTM C113 AND C865			
Expansion or Shrinkage			
Cured and Then Dried at 220°F (105°C)	Ni		
Heated at 1500°F (815°C) and Then Cooled	0.2%		
Heated at 2000°F (1095°C) and Then Cooled	0.2%		
Heated at 2500°F (1260°C) and Then Cooled	1.4%		
Heated at 2910°F (1600°C) and Then Cooled	2.3%		
MODULUS OF RUPTURE - ASTM C133 AND C865	lb/in <sup>2</sup>	MPa	
Cured and Then Dried at 200°F (105°C)	2250	15.5	
Heated at 1500°F (815°C) and Then Cooled	2200	15.2	
Heated at 2000°F (1095°C) and Then Cooled	2250	15.5	
Heated at 2500°F (1370°C) and Then Cooled	1800	12.4	
COLD CRUSHING STRENGTH - ASTM C133 AND C865			
Cured and Then Dried at 220°F (105°C)	11500	79.3	
Heated at 1500°F (815°C) and Then Cooled	10000	68.9	
Heated at 2000°F (1095°C) and Then Cooled	11500	79.3	
Heated at 2500°F (1370°C) and Then Cooled	9000	62.0	
PARTICLE SIZE - ASTM C92			
Retained on Mesh Screen (4.7 mm opening)			
Dry Analysis	2.0%	Max	
THERMAL CONDUCTIVITY	Btu-in		
At a Mean Tempereature of	ft2hr°F	W/m°C	
400°F (205°C)	10.6	1.53	
800°F (425°C)	10.6	1.53	
1200°F (650°C)	9.8	1.41	
1600°F (870°C)	9.8	1.41	
2000°F (1095°C)	10.0	1.44	
2400°F (1315°C)	10.0	1.44	
ABRASION LOSS - ASTM C704			
Cured and Then Dried at 220°F (105°)	6	CC	
Heated at 1500°F (815°C) and Then Cooled	6	CC	

The test data shown are based on results of a limited number of tests and are subject to normal variation on individual tests. Accordingly, test data cannot be taken as establishing maximum or minimum specifications.



# **ALSTOP GREFCON® 60**

Aluminum Resistant, Low Cement Castable

ALSTOP GREFCON® 60 is a 60% alumina low cement castable characterized by its high density, low porosity and high hot strength, for use in aluminum contact applications. ALSTOP GREFCON® 60 is designed for placement by pumping, hand casting, vibration cast or rammed using varying water contents.

#### **CHEMICAL ANALYSIS - Calcined Basis**

Silica - SIO <sub>2</sub>	
Alumina - Ál <sub>2</sub> O <sub>3</sub>	
Iron Oxide - Fe₂O₃	0.9%
Lime - CaO	102%
Magnesia - MgO	The state of the s
Titania - TIO	11.00/
Alkalies $-Na_2O + K_2O$	0.2%
Alkanes - Na <sub>2</sub> O + N <sub>2</sub> O -	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
- Otner.	

A. P. Green is a supplier of high duty and super duty brick, insulating firebrick, high alumina brick, basic brick, silica brick, mortars, plastics, castables, and precast shapes as well as mineral wool block insulation and a complete ceramic fiber line. Stocks of these products are maintained in more than 90 locations throughout North America. And, having been in the refractories business for more than 80 years, A. P. Green can also provide the expertise and thorough technical assistance that you might require.



OCT 24 '96 12:43



# **ALSTOP GREFCON® 60**

Technical Data

		Cast	
MAXIMUM RECOMMENDED TEMPERATURE	3000°F		1650°C
FOR ALUMINUM CONTACT	2500°F		1370°C
	lb/ft3		g/cm <sup>3</sup>
QUANTITY REQUIRED - Net	157		2.51
QUANTITY IN PLACE			
Dried at 230°F (110°C)	154		2.47
Heated at 1500°F (815°C) and Then Cooled	153		2.45
WATER REQUIRED FOR MIXING		<b>Approximate</b>	ly
Weight % Dry Solids		6.8	
Per 100 Pounds (45.4 kg)6	1/2 pints	(U.S.)	3 1/8 liters
MAXIMUM TIME FROM ADDING WATER TO PLACING			
Minutes		20	
DRYING AND FIRING SHRINKAGE - ASTM C113			
Shrinkage or Expansion - Percent of Original Length			
Dried at 230°F (110°C)		Nil	
Heated at 1500°F (815°C) and Then Cooled		0.2 shr.	
Heated at 2000°F (1095°C) and Then Cooled		0.4 shr.	
Heated at 2500°F (1370°C) and Then Cooled		0.4 shr.	
MODULUS OF RUPTURE - ASTM C133	lb/in <sup>2</sup>		MPa
Dried at 230°F (110°C)	1600		11.0
Heated at 1500°F (815°C) and Then Cooled	2600		17.9
Heated at 2000°F (1095°C) and Then Cooled	3000		20.7
Heated at 2500°F (1370°C) and Then Cooled	3500		24.1
HOT MODULUS OF RUPTURE - ASTM C583			
Heated at 1500°F (815°C)	3600		24.8
COLD CRUSHING STRENGTH - ASTM C133			
Dried at 230°F (110°C)	9200		63.4
Heated at 1500°F (815°C) and Then Cooled	10000		70.0
Heated at 2000°F (1095°C) and Then Cooled	12000		82.8
Heated at 2500°F (1370°F) and then Cooled	11900		82.1
PARTICLE SIZE - ASTM C92			
Retained on a 4 Mesh Tyler Screen (4.7 mm opening)			
Wet Analysis		10.0%	

Manufacturing Locations: Sproul, PA and Sulphur Springs, TX

The test data shown are based on average results on production samples and are subject to normal variation on individual tests. Accordingly, test data cannot be taken as establishing maximum or minimum specifications.

October 25, 1995



A. P. Green Industries, Inc., Mexico, Missouri, U.S.A. • Phone: 314-473-3626 Fax: 314-473-3330

A. P. Green Refractories (Canada) Ltd., Weston, Ontario, Canada • Phone: 416-241-5241 Fax: 416-241-3102

A. P. Green Refractories Ltd., Bromborough, England • Phone: (44-51) 645-0701 Fax: (44-51) 645-8261



### North American Refractories Co.

VESTERN DIVISION



BRAND: REFRACRETE ES

ASTM CLASS: C

APPLICATION: CAST MIX AND GUNNING MIX

DESCRIPTION: A fireclay based, general purpose high strength

2500°F castable.

SERVICE DATA: (ASTM C113, C133, C20)

(After firing to stated temperature)

Temperature, °F	Permanent Linear Change, %	Modulus of Hupture, psi	Cold Crushing, psi
220	- 0	600-1000	2500-3500
1000	-0.1	400-600	1800-2500
1500	-0.1	300-400	1600-2000
2000	-0.3	300-400	1600-2000
2500	+1.2	900-1300	3000-3800
2910			
3000			
M.S.T.			

#### APPLICATION DATA:

Maximum Service Temperature (MST)	( °F)	2500
Amount Required for Installation	(pcf.)	125-130
Bulk Density - After Drying at 220°F	(pcf.)	128-135
- After Firing to 2500°F	(pcf.)	120-128
Water required for 100 lbs. dry (Approx.)	(wt.%)	13

### CHEMICAL DATA: (ASTM C573)

Alumina (Al <sub>2</sub> O <sub>3</sub> )	41.1	%	Lime (CaO)	11.3	0/2
Silica (SiO <sub>2</sub> )	40.9	%	Magnesia (MgO)	0.4	%
Titania (TiO <sub>2</sub> )	2.4	%	Alkalies (Na <sub>2</sub> O, K <sub>2</sub> O)	0.5	%
Ferric Oxide (Fe <sub>2</sub> O <sub>3</sub> )	3.5	%	L.O.I.	0.3	%



### North American Refractories Co.

**VESTERN DIVISION** 



BRAND: REFRACRETE ESC

ASTM CLASS: C

APPLICATION: CAST MIX

DESCRIPTION: A high strength 2500°F castable with improved

resistance to thermal shock.

SERVICE DATA: (ASTM C113, C133, C20)

(After firing to stated temperature)

Temperature, °F	Permanent Linear Change, %	Modulus of Rupture, psi	Cold Crushing, psi
220	C	900-1300	4500-6000
1000	0	650-750	3800-4400
1500	C	650-750	3700-4300
2000	0	350-500	2500-3300
2500	0	750-1100	4200-5500
2910			
3000			
M.S.T.	0		

#### APPLICATION DATA:

Maximum Service Temperature (MST)	( °F)	2500
Amount Required for Installation	(pcf.)	135-140
Bulk Density - After Drying at 220°F	(pcf.)	135-143
- After Firing to 2500°F	(pcf.)	132-140
Water required for 100 lbs. dry (Approx.)	(wt.%)	10

### CHEMICAL DATA: (ASTM C573)

Alumina (Al <sub>2</sub> O <sub>3</sub> )	44.2	%	Lime (CaO)	10.2	%
Silica (SiO <sub>2</sub> )	39.1	%	Magnesia (MgO)	0.1 %	%
Titania (TiO₂)	2.3	%	Alkalies (Na <sub>2</sub> O, K <sub>2</sub> O)	0.3	%
Ferric Oxide (Fe <sub>2</sub> O <sub>3</sub> )	3.4	%	L.O.I.	0.4	%

# TECHNICAL DATA

PRODUCT NAME

# KS-4V and KS-4V Plus

#### NOTE

The test data shown are based on average results of control tests and are subject to normal variation on individual tests. Accordingly, test data cannot be taken as establishing maximum or minimum specifications. Sample averages would be expected to meet a unilateral limit for each property 90% of the time.

### PRODUCT DESCRIPTION/APPLICATION

KS-4V (Poured) is a general purpose castable for use to temperatures to 2600°F. KS-4V features good resistance to abrasion, a low iron content, and minimal shrinkage, even when used in large patches.

KS-4V Plus contains an added ingredient which provides a fast fire-in capability, reducing the dangers of explosive spalling.

### CHEMICAL ANALYSIS

Silica - SiO <sub>2</sub>	37.0 - 42.0%
Alumina - Al <sub>2</sub> O <sub>3</sub>	
Iron Oxide - Fe <sub>2</sub> O <sub>3</sub>	. 1.2 - 2.2%
Lime - CaO	
Magnesia - MgO	
Titania - TiO <sub>2</sub>	
Alkalies - Na <sub>2</sub> O + K <sub>2</sub> O	. 0.5 - 1.5%

### (PHYSICAL PROPERTIES on reverse side)

### PHYSICAL PROPERTIES

### KS-4V and KS-4V Plus\*

2600°F, High Strength Castable

		Poured
MAXIMUM RECOMMENDED TEMPERATURE	2600°F	1425°C
QUANTITY REQUIRED	125 lb/ft <sup>3</sup>	$2.00 \text{ g/cm}^3$
QUANTITY IN PLACE	lb/ft3	g/cm <sup>3</sup>
Cured and then Dried at 220°F (105°C)	128 - 135	2.05 - 2.16
Heated at 1500°F (815°C)	121 - 128	1.94 - 2.05
WATER REQUIRED FOR MIXING	A	proximately
Weight % Dry Solids		12.5%
Per 100 Pounds (45.4 kg)	11/2 gal (U.S.)	5.7 liters
MAXIMUM TIME FROM ADDING WATER TO PLA	CING MATER	IAL
Minutes		20
PERMANENT LINEAR CHANGE - ASTM C113 AND	C865	
Expansion or Shrinkage		
Cured and Then Dried at 220°F (105°C)		Nil
Heated at 1500°F (815°C) and Then Cooled		0 - 0.3% shr.
Heated at 2000°F (1095°C) and Then Cooled		0 - 0.5% shr.
Heated at 2500°F (1370°C) and Then Cooled	11 120	0.3% to 1.5% exp.
MODULUS OF RUPTURE - ASTM C133 AND C865	lb/in <sup>2</sup>	<u>MPa</u>
Cured and Then Dried at 220°F (105°C)	750 - 1200	5.2 - 8.3
Heated at 1500°F (815°C) and Then Cooled	300 - 650	2.1 - 4.5
Heated at 2000°F (1095°C) and Then Cooled	250 - 500	1.7 - 3.4
COLD CRUSHING STRENGTH - ASTM C133 AND C		
Cured and Then Dried at 220°F (105°C)	2900 - 4900	20.0 - 33.8
Heated at 1500°F (815°C) and Then Cooled	1600 - 3000	11.0 - 20.7
Heated at 2000°F (1095°C) and Then Cooled	1400 - 2800	9.7 - 19.3
PARTICLE SIZE - ASTM C92		
Retained on 6 Mesh Tyler Screen (3.35 mm opening		
Dry Analysis		ss Than 3%
THERMAL CONDUCTIVITY	Btu-in	W/mC
At a Mean Temperature of	ft <sup>2</sup> hr F	
400°F (205°C)	6.4	0.92
800°F (425°C)	6.4	0.92
1200°F (650°C)	6.4	0.92
1600°F (870°C)	6.5	0.94
2000°F (1095°C)	6.6	0.95
2400°F (1315°C)	6.8	0.98

<sup>\*</sup>Note: KS-4V Plus will typically show 1-3 lb/ft3 lower density and up to 15% lower strength values.

November 19, 1991

A. P. GREEN INDUSTRIES, INC. MEXICO, MISSOURI 65265 U.S.A. Telephone: (314) 473-3626



# TECHNICAL DATA

PRODUCT NAME

# **MC-22**

#### NOTE

The test data shown are based on average results of control tests and are subject to normal variation on individual tests. Accordingly, test data cannot be taken as establishing maximum or minimum specifications. Sample averages would be expected to meet a unilateral limit for each property 90% of the time.

### PRODUCT DESCRIPTION/APPLICATION

MC-22 is a 2350° F. coarse aggregate castable with outstanding strength. Actually demonstrates two or three times the strength of ordinary castables. Ideal for heavy, massive construction; where high compressive strength is required to carry heavy loads, or where thermal shock resistance is important.

### CHEMICAL ANALYSIS

CHEMICAL ANALYSIS - Calcined Basi	S
Silica - SiO <sub>2</sub>	
Iron Oxide - Fe <sub>2</sub> O <sub>3</sub>	
Lime - CaO	
Magnesia - MgO	0.1 - 0.5%
Titania - TiO2	
Alkalies - Na <sub>2</sub> O + K <sub>2</sub> O	

### (PHYSICAL PROPERTIES on reverse side)

# A. P. GREEN INDUSTRIES, INC. PHYSICAL PROPERTIES

### MC-22

2350°F, Coarse, High Strength Castable

MAXIMUM RECOMMENDED TEMPERATURE	2350°F	1290°C
QUANTITY REQUIRED - Net		2.00 g/cm <sup>3</sup>
QUANTITY IN PLACE	lb/ft <sup>3</sup>	g/cm <sup>3</sup>
Cured and Then Dried at 220°F (105°C)	A STATE OF THE STA	2.07 - 2.15
Heated at 1500°F (815°C) and Cooled		1.96 - 2.04
WATER REQUIRED FOR MIXING	Approxi	
Per 100 Pounds (45.4 kg)	1 1/2 gal (US)	5.7 liters
MAXIMUM TIME FOR ADDING WATER TO PLA	CING MATERIA	
Minutes	20	
PERMANENT LINEAR CHANGE - ASTM C113 A		<i>i</i>
	ND C005	
Expansion or Shrinkage	NT:	1
Cured and Then Dired at 220°F (105°C)		70
Heated at 1500 °F (815°C) and Then Cooled		0.1% exp
Heated at 2000°F (1095°C) and Then Cooled		
Heated at 2300°F (1260°C) and Then Cooled	20 - 0.89	% shr
MODULUS OF RUPTURE - ASTM C133 and C865		<u>MPa</u>
Cured and Then Dried at 220°F (105°C)		
Heated at 1500°F (815°C) and Then Cooled		2.1 - 3.1
Heated at 2000°F (1095°C) and Then Cooled	250 - 400	1.7 - 2.8
COLD CRUSHING STRENGTH - ASTM C133 ANI	D C865	
Cured and Then Dried at 220°F (105°C)	3000 - 5500	20.7 - 37.9
Heated at 1500°F (815°C) and Then Cooled	2000 - 3500	13.8 - 24.1
Heated at 2000°F (1095°C) and Then Cooled		10.3 - 20.7
PARTICLE SIZE - ASTM C92		
Retained on 3/4 Inch Mesh Screen (19.1 mm opening	)	
Dry Analysis		ian 4%
THERMAL CONDUCTIVITY	Btu-in	W/m°C
at a Mean Temperature of	ft <sup>2</sup> hr°F	
400°F (205°C)		0.71
800°F (425°C)		0.76
1200°F (650°C)		0.70
		0.84
1600°F (870°C)		0.85
2000°F (1095°C)		0.00

A. P. GREEN INDUSTRIES, INC. MEXICO, MISSOURI 65265 U.S.A. Telephone: (314) 473-3626

May 25, 1990



# TECHNICAL DATA

PRODUCT NAME

# **MIZZOU CASTABLE**

#### NOTE

The test data shown are based on average results of control tests and are subject to normal variation on individual tests. Accordingly, test data cannot be taken as establishing maximum or minimum specifications. Sample averages would be expected to meet a unilateral limit for each property 90% of the time.

### PRODUCT DESCRIPTION/APPLICATION

MIZZOU CASTABLE is a high alumina material for use to 3000°F. It has excellent resistance to numerous different slags, resists vitrification, and actually shows expansion rather than shrinkage at high temperatures. Also has superior resistance to spalling and high strength throughout its entire temperature range.

### CHEMICAL ANALYSIS

CHEMICALANALYSIS	
Silica - SiO <sub>2</sub>	. 31.0 - 35.0%
Alumina - Al <sub>2</sub> O <sub>3</sub>	57.0 - 61.0%
Iron Oxide - Fe <sub>2</sub> O <sub>3</sub>	
Lime - CaO	
Magnesia - MgO	0.1 - 0.6%
Titania - TiO2	
Alkalies - Na <sub>2</sub> O + K <sub>2</sub> O	0.3 - 0.8%

## (PHYSICAL PROPERTIES on reverse side)

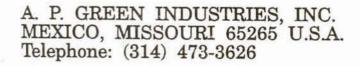
# A. P. GREEN INDUSTRIES, INC. PHYSICAL PROPERTIES

### THISTOAL THOTERTIES

## **MIZZOU CASTABLE**

60% Alumina Castable	.22	
MAXIMUM RECOMMENDED TEMPERATURE	3000°F	1650°C
QUANTITY REQUIRED		2.23 g/cm <sup>3</sup>
QUANTITY IN PLACE	lb/ft <sup>3</sup>	g/cm <sup>3</sup>
Cured and then Dried at 220°F (105°C)		2.21 - 2.37
Heated at 1500°F (815°C)		2.15 - 2.31
WATER REQUIRED FOR MIXING	Approxi	
Weight % Dry Solids		
Per 100 Pounds (45.4 kg)	1 1/8 gal (US)	4.3 liters
Per 100 Pounds (45.4 kg)	MATERIAL.	1.5 111015
Minutes		
PERMANENT LINEAR CHANGE - ASTM C113 AND C865		
Expansion or Shrinkage		
Cured and Then Dried at 220°F (105°C)	0 - 0.29	% shr
Heated at 1500°F (815°C) and Then Cooled	0 - 0.39	
Heated at 2000°F (1095°C) and Then Cooled	0 - 0.49	
Heated at 2500°F (1370°C) and Then Cooled	0.5 - 1.3	
Heated at 2900°F (1595°C) and Then Cooled	1.5 - 4.0	
MODULUS OF RUPTURE - ASTM C133 AND C865	lb/in <sup>2</sup>	MPa
Cured and Then Dried at 220°F (105°C)	650 - 1500	4.5 - 10.3
Heated at 1500°F (815°C) and Then Cooled	400 - 1000	2.8 - 6.9
Heated at 2000°F (1095°C) and Then Cooled	300 - 650	2.1 - 4.5
Heated at 2500°F (1370°C) and Then Cooled	600 - 1300	4.1 - 9.0
COLD CRUSHING STRENGTH - ASTM C133 AND C865		
Cured and Then Dried at 220°F (105°C)	3000 - 7000	20.1 - 48.3
Heated at 1500°F (815°C) and Then Cooled	2000 - 4000	13.8 - 27.6
Heated at 2000°F (1095°C) and Then Cooled	1500 - 3900	10.3 - 26.9
Heated at 2500°F (1370°C) and Then Cooled	2200 - 5000	15.2 - 34.5
PARTICLE SIZE - ASTM C92		8
Retained on 4 Mesh Tyler Screen (4.70 mm opening)		
Dry Analysis	Less Th	an 5%
THERMAL CONDUCTIVITY	Btu-in	W/m°C
At a Mean Temperature of	ft <sup>2</sup> hr°F	
400°F (205°C)	7.8	1.12
800°F (425°C)	7.7	1.11
1200°F (650°C)	7.6	1.10
1600°F (870°C)	7.5	1.08
2000°F (1095°C)	7.4	1.07
2400°F (1315°C)	7.4	1.07

December 5, 1990





# 'SAIRSET®

Wet, High Strength, High Temperature Bonding Mortar

'SAIRSET is a wet, high strength, air-setting, high temperature mortar. This product was formulated for troweled mortar joints in brick linings. For dipping consistency, water must be added to the pail. This mortar is used to lay high duty, super duty, high fired super duty, and 50% alumina firebrick. Its maximum operating temperature is 3000°F.

#### CHEMICAL ANALYSIS - Calcined Basis

Silica - SiO <sub>2</sub>	58.0	-	62.0%
Alumina - Āl <sub>2</sub> O <sub>3</sub>	31.0	-	35.0%
Iron Oxide - Fe <sub>2</sub> O <sub>3</sub>			
Lime - CaO			
Magnesia - MgO	0.1	_	0.4%
Titania - TiO <sub>2</sub>			
Alkalies - $Na_2O + K_2O$			

A. P. Green is a supplier of high duty and super duty brick, insulating firebrick, high alumina brick, mortars, plastics and castables, as well as mineral wool block insulation and a complete ceramic fiber product line. Stocks of these products are maintained in more than 60 locations throughout North America. And, having been in the refractories business for more than 80 years, A. P. Green can also provide the expertise and thorough technical assistance that you might require.





WAXIMUM RECOMMENDED TEMPERATURE	3000°F	1650°C
REFRACTORINESS TEST - ASTM C199 2910°F (1600°C) Test Temperature	No Softening or Flowing	
QUANTITY REQUIRED TO LAY 1,000 9x4½x2½" (229x114x63 mm) BRICK		
Dipping Consistency	350 - 400 lb	159 - 181 kg
WATER REQUIRED FOR TEMPERING	Approx	imately
Volume per 100 pounds (45.4 kg) For Laying Brick	Gal (U.S.)	Liters
Troweling Consistency	1/4	0.9
Dipping Consistency	11/4	4.7
MODULUS OF RUPTURE - ASTM C198 On KX-99 Brick with Ends Bonded Together		
Using Mortar in Troweling Consistency	lb/in <sup>2</sup>	MPa
Dried at 220°F (105°C)	400 - 900	2.8 - 6.2
Heated at 1500°F (815°C) and Then Cooled	200 - 650	1.4 - 4.5
WATER RETENTION		
A.R.I. Technical Bulletin No. 60	14 Minutes	
PARTICLE SIZE - ASTM C92		
Maximum Retained on 20 Mesh (0.83 mm opening)	0.	5%
Maximum Retained on 35 Mesh (0.42 mm opening)	5	0%

The test data shown are based on average results of control tests and are subject to normal variation on individual tests. Accordingly, test data cannot be taken as establishing maximum or minimum specifications. Sample averages would be expected to meet a unilateral limit for each property 90% of the time.





### North American Refractories Co.

WESTERN DIVISION



BRAND: SUPER TENAX

ASTM CLASS: SUPER-DUTY 2910°F

TYPE: WET, AIR SET

PCE: 34-35

DESCRIPTION: High quality air-set mortar with good resistance

to iron oxide attack.

#### APPLICATION DATA:

Amount required per 1000 bricks, lbs. (Approx.):

Dried Bond Strength at 220°F. psi 400-600

Particle Sizing

+35 mesh: 0-5

-100 mesh:

Water required for trowelling, qts/100 lb : As supplied

Water required for dipping, qts/100 lb

: 3-4 additional

#### CHEMICAL DATA:

Alumina (Al <sub>2</sub> O <sub>3</sub> )	49.6	%
Silica (SiO <sub>2</sub> )	47.0	%
Titania (TiO <sub>2</sub> )	0.7	%
Ferric Oxide (Fe₂O₃)	0.5	01/0
Lime (CaO) + Magnesia (MgO)	Tr	%
Alkalies (Na <sub>2</sub> O, K <sub>2</sub> O)	2.3	%
Phosphorous Pentoxide (P2O5)		%
Other		70

# TECHNICAL DATA

PRODUCT NAME

# **LO-ABRADE Plus**

#### NOTE

The test data shown are based on average results of control tests and are subject to normal variation on individual tests. These results <u>cannot</u> be taken as maximum or minimum requirements for specification purposes.

### PRODUCT DESCRIPTION/APPLICATION

LO-ABRADE Plus is a 2600°F. castable with excellent resistance to abrasion and/or erosion for poured installation only. Also contains low iron, making it particulary good for use in specialized atmosphere furnaces. Recommended for use where abrasion is encountered - whether from rubbing, grinding, high energy impact or erosion, such as is experienced with high velocity, high temperature, dust laden gases. LO-ABRADE Plus contains an added ingredient which provides a fast fire-in capability, reducing the dangers of explosive spalling.

### CHEMICAL ANALYSIS

CHEMICAL ANALYSIS - Calcined Basis	
Silica - SiO <sub>2</sub>	34.0 - 37.0%
Alumina - Al <sub>2</sub> O <sub>3</sub>	
Iron Oxide - Fe <sub>2</sub> O <sub>3</sub>	1.0 - 1.5%
Lime - CaO	4.0 - 6.0%
Magnesia - MgO	0.1 - 0.6%
Titania - TiO2	1.0 - 2.0%
Alkalies - Na <sub>2</sub> O + K <sub>2</sub> O	0.5 - 1.5%

# (PHYSICAL PROPERTIES on reverse side)

## PHYSICAL PROPERTIES

MAXIMUM RECOMMENDED TEMPERATU	RE2600°F	1425°C
QUANTITY REQUIRED - Net	129 lb/ft <sup>3</sup>	2.07 g/cm <sup>3</sup>
QUANTITY IN PLACE	lb/ft <sup>3</sup>	g/cm <sup>3</sup>
Cured and Then Dried at 220°F (105°C)	133 - 141	2.13 - 2.26
Heated at 1500°F (815°C) and Cooled	125 - 133	2.00-2.13
WATER REQUIRED FOR MIXING	Approxi	mately
WATER REQUIRED FOR MIXING Per 100 Pounds (45.4 kg)	11/4 gallons (	US) 4.7 liters
MAXIMUM TIME FROM ADDING WATER T	O PLACING MATER	RIAL
Minutes		
PERMANENT LINEAR CHANGE - ASTM C1	13 AND C865	4.
Expansion or Shrinkage		
Cured and Then Dried at 220°F (105°C)	N	il
Heated at 1000°F (540°C) and Then Cooled		% shr
Heated at 1500°F (815°C) and Then Cooled		% shr
Heated at 2000°F (1095°C) and Then Cooled		% shr
Heated at 2300°F (1260°C) and Then Cooled		
MODULUS OF RUPTURE - ASTM C133 AND		MPa
Cured and Then Dried at 220°F (105°C)		6.9 - 9.7
Heated at 1500°F (815°C) and Then Cooled		
Heated at 2000°F (1095°C) and Then Cooled		
COLD CRUSHING STRENGTH - ASTM C133	3 AND C865	
Cured and Then Dried at 220°F (105°C)	4000 - 9000	27.6 - 62.0
Heated at 1500°F (815°C) and Then Cooled		
Heated at 2000°F (1095°C) and Then Cooled	2500 - 6000	17.2 - 41.4
PARTICLE SIZE - ASTM C92		
Retained on 4 Mesh Tyler Screen (4.70 mm op	ening)	
Wet Analysis	Less th	an 2%
ABRASION LOSS - ASTM C704	<u>c</u>	<u>c</u>
Heated at 1500°F (815°C) and Then Cooled	12.0 -	- 17.0
THERMAL CONDUCTIVITY	Btu/in	W/m°C
At a mean temperature of	ft <sup>2</sup> hr°F	
400°F (205°C)	5.6	0.81
800°F (425°C)		0.88
1200°F (650°C)	6.2	0.89
1600°F (870°C)	6.2	0.89
2000°F (1095°C)	6.5	0.94
June 29, 1989		
		I M M M M M M M M M M M M M M M M M M M

A. P. GREEN INDUSTRIES, INC. GREEN BOULEVARD MEXICO, MISSOURI 65265 U.S.A.

Telephone: (314) 473-3626



## North American Refractories Co.

WESTERN DIVISION



BRAND: DIABLO-D

ASTM CLASS: SUPER-DUTY FIRECLAY BRICK

PCE: 33+

DESCRIPTION: Dense Super-duty fireclay with very good resistance

to hot load deformation and slag attack.

#### SERVICE DATA:

Modulus of Rupture (ASTM C133)	(psi)	1,100-1,800
Cold Crushing Strength (ASTM C133)	(psi)	4,200-5,500
Hot Load Test (ASTM C16)		
Schedule 2460°F	(%)	
Schedule 2640°F	(%)	1.3
Reheat Test (ASTM C113)		
5 hrs. @ 2550°F	(%)	
5 hrs. @ 2732°F	(%)	
5 hrs. @ 2910°F	(%)	-1.0
Panel Spall (ASTM C107)	(%)	<10

#### CHEMICAL DATA: (ASTM C573)

CHEMICAL DATA: (	ASTM C573)		PHYSICAL DA	TA:	(ASTM C20)
Silica (SiO <sub>2</sub> )	52.5	of 10	Bulk Density (	(pcf)	140-144
Alumina (Al <sub>2</sub> O <sub>3</sub> )	43.5	%	App. Porosity	(%)	14.0-18.0
Titania (TiO <sub>2</sub> )	2.3	70	Water Absorption	(%)	6.5-7.5
Iron Oxide (Fe₂O₃)	1.0	%			
Calcia (CaO)	0.1	70			
Magnesia (MgU)	0.2	97			
Alkalies (Na <sub>2</sub> O, K <sub>2</sub> O)	0.4	%			
Phosphorus Pentoxide (P	205)	%			



### North American Refractories Co.

WESTERN DIVISION



BRAND: REFRACRETE ESC

ASTM CLASS: C

APPLICATION: CAST MIX

DESCRIPTION: A high strength 2500°F castable with improved

resistance to thermal shock.

SERVICE DATA: (ASIM Cll3, Cl33, C20)

(After firing to stated temperature)

Temperature, °F	Permanent Linear Change, %	Modulus of Rupture, psi	Cold Crushing, psi
220	0	900-1300	4500-6000
1000	0	650-750	3800-4400
1500	C	650-750	3700-4300
2000	0	350-500	2500-3300
2500	0	750-1100	4200-5500
2910		"	
3000	1 <del></del>		
M.S.T.	0		

#### APPLICATION DATA:

Maximum Service Temperature (MST)	( °F)	2500
Amount Required for Installation	(pcf.)	135-140
Bulk Density - After Drying at 220°F	(pcf.)	135-143
- After Firing to 2500°F	(pcf.)	132-140
Water required for 100 lbs. dry (Approx.)	(wt.%)	10

### CHEMICAL DATA: (ASTM C573)

Alumina (Al <sub>2</sub> O <sub>3</sub> )	44.2	%	Lime (CaO)	10.2	73
Silica (SiO <sub>2</sub> )	39.1	%	Magnesia (MgO)	0.1	%
Titania (TiOz)	2.3	%	Alkalies (Na <sub>z</sub> O, K <sub>z</sub> O)	0.3	%
Ferric Oxide (Fe <sub>2</sub> O <sub>3</sub> )	3.4	%	L.O.I.	0.4	%

# TECHNICAL DATA

PRODUCT NAME

# INSBOARD 2600 HD

#### NOTE

The test data shown are based on average results of control tests and are subject to normal variation on individual tests. Accordingly, test data cannot be taken as establishing maximum or minimum specifications. Sample averages would be expected to meet a unilateral limit for each property 90% of the time.

### PRODUCT DESCRIPTION/APPLICATION

INSBOARD 2600 HD is a high density, vacuum formed board with excellent insulating properties and increased mechanical strength. Its primary application is as hot face furnace insulation where low thermal mass is a priority. Its physical properties improve its ability to withstand mechanical abuse. Applications include petro-chemical heaters, ceramic kilns, steel, aluminum, and the glass industry.

### CHEMICAL ANALYSIS

# CHEMICAL ANALYSIS

\*NOTE: MAY INCLUDE UP TO 15% ZRO2 IN PLACE OF AL203 WITHOUT MAJOR CHANGES TO PHYSICAL PROPERTIES.

### (PHYSICAL PROPERTIES on reverse side)

# A. P. GREEN INDUSTRIES, INC. PHYSICAL PROPERTIES

MAXIMUM RECOMMENDED TEMPERATURE		1425°C
COLOR	White With No	
BULK DENSITY (+ or - 15%)	26 lb/ft	0.42 g/cm <sup>3</sup>
MODULUS OF RUPTURE		1.38 mpa
COMPRESSIVE STRENGTH	Ib/in <sup>2</sup>	<u>Mpa</u>
10% Deformation	35	0.24
25% Deformation		0.48
HARDNESS (1" Dia. Indentor)	lbs.	N
10% Deformation	55	244
25% Deformation		444
PERMANENT LINEAR CHANGE		
Per Cent Shrinkage		
24 Hours at 2200°F (1205°C) Soaking Temperature	e3.1	
24 Hours at 2400°F (1315°C) Soaking Temperature	e3.3	
24 Hours at 2600°F (1425°C) Soaking Temperature	e3.5	
THERMAL CONDUCTIVITY	Btu/in	
At a Mean Temperature	ft2hr°F	W/m°C
800°F (425°C)	0.6	0.09
1200°F (650°C)		0.12
1600°F (870°C)		0.14
2000°F (1095°C)		0.17

AUGUST 28, 1989

A. P. GREEN INDUSTRIES, INC. MEXICO, MISSOURI 65265 U.S.A. Telephone: (314) 473-3626



# TECHNICAL DATA

PRODUCT NAME

# **INSBOARD 2300 HD**

### NOTE

The test data shown are based on average results of control tests and are subject to normal variation on individual tests. Accordingly, test data cannot be taken as establishing maximum or minimum specifications. Sample averages would be expected to meet a unilateral limit for each property 90% of the time.

### PRODUCT DESCRIPTION/APPLICATION

INSBOARD 2300 HD is a high density, vacuum formed ceramic fiber board with excellent insulating characteristics and increased mechanical strength. It is often used as a hot face insulation due to its physical properties but is primarily a back up insulation. Applications include petro-chemical, steel, glass, ceramics, aluminum, and waste incineration.

### CHEMICAL ANALYSIS

### 

(PHYSICAL PROPERTIES on reverse side)

# A. P. GREEN INDUSTRIES, INC. PHYSICAL PROPERTIES

MAXIMUM RECOMMENDED TEMPERATURE.	2300°F	1260°C
COLOR		
BULK DENSITY (+ or - 15%)	26 lb/ft <sup>3</sup>	$0.42 \text{ g/cm}^3$
MODULUS OF RUPTURE	200 lb/in <sup>2</sup>	0.83 mpa
COMPRESSIVE STRENGTH	lb/in <sup>2</sup>	Мра
10% Deformation.		0.34
25% Deformation.		0.76
HARDNESS (1" Dia. Indentor)	lbs.	N
10% Deformation	50	222
25% Deformation	120	532
PERMANENT LINEAR CHANGE		
Per Cent Shrinkage		
24 Hours at 2000°F (1095°C) Soaking Temperature	2.3	ė.
24 Hours at 2200°F (1205°C) Soaking Temperature	2.8	
THERMAL CONDUCTIVITY	Btu/in	
At a Mean Temperature	ft <sup>2</sup> hr°F	$W/m^{\circ}C$
400°F (205°C)	0.4	0.05
800°F (425°C)		0.09
1200°F (650°C)	0.8	0.12
1600°F (870°C)	1.0	0.14
2000°F (1095°C)	1.2	0.17

August 28. 1989

A. P. GREEN INDUSTRIES, INC. MEXICO, MISSOURI 65265 U.S.A. Telephone: (314) 473-3626



# TECHNICAL DATA

PRODUCT NAME

# G-28 LI

#### NOTE

The test data shown are based on average results of control tests and are subject to normal variation on individual tests. These results <u>cannot</u> be taken as maximum or minimum requirements for specification purposes.

### PRODUCT DESCRIPTION/APPLICATION

G-28 LI is an insulating brick with a maximum recommended temperature of 2800°F. The low iron content of G-28 LI gives it excellent resistance to carbon monoxide disintegration and enables it to meet many specifications in the hydrocarbon and industries.

### CHEMICAL ANALYSIS

## CHEMICALANALYSIS

Silica - SiO <sub>2</sub>	35.0 - 38.0%
Alumina - Al <sub>2</sub> O <sub>3</sub>	
Iron Oxide - Fe <sub>2</sub> O <sub>3</sub>	
Magnesia - MgO	0.0 - 0.5%
Titania - TiO2	1.0 - 2.0%
Alkalies - Na <sub>2</sub> O + K <sub>2</sub> O	0.1 - 0.5%

## (PHYSICAL PROPERTIES on reverse side)

## PHYSICAL PROPERTIES

MAXIMUM RECOMMENDED TEMPERATURE2800°F	F 1540°C
REHEAT (Permanent Linear Change) - ASTM C210	
Contraction or Expansion at 2750°F (1510°C)	1.2% contr
lb/ft <sup>3</sup>	g/cm <sup>3</sup>
BULK DENSITY - ASTM C134 56	0.90
lb/in <sup>2</sup>	MPa
MODULUS OF RUPTURE - ASTM C93 180	1.24
COLD CRUSHING STRENGTH - ASTM C93 300	2.07
THERMAL CONDUCTIVITY Btu-in	W/m°C
At a mean temperature of <u>ft<sup>2</sup>hr°F</u>	3
500°F (260°C)2.5	0.36
1000°F (540°C)2.6	0.38
1500°F (815°C)	0.40
2000°F (1095°C)	0.43

AP GREEN REFRACTORIES

A. P. GREEN INDUSTRIES, INC. GREEN BOULEVARD MEXICO, MISSOURI 65265 U.S.A.

July 14, 1989

Telephone: (314) 473-3626

# **INSBLOK-19**

Mineral Wool, Block Insulation

INSBLOK-19 is a lightweight mineral wool block that retains its stability and high thermal efficiency up to 1900°F. Features include high temperature resistance, low thermal conductivity, moisture resistance, and easy handling and cutting. INSBLOK-19 should be used as a back-up material only.

#### CHEMICAL ANALYSIS - Calcined Basis

Silica - SiO <sub>2</sub>	47.0	-	51.0%
Alumina - $\tilde{A}l_2O_3$			
Iron Oxide - Fe <sub>2</sub> O <sub>3</sub>	0.5		1.5%
Lime - CaO	26.0	-	30.0%
Magnesia - MgO	5.5	-	7.5%
Titania - TiO <sub>2</sub>	0.3	-	1.0%
Alkalies - Na <sub>2</sub> O + K <sub>2</sub> O	2.0	-	3.0%

A. P. Green is a supplier of high duty and super duty brick, insulating firebrick, high alumina brick, mortars, plastics and castables, as well as mineral wool block insulation and a complete ceramic fiber product line. Stocks of these products are maintained in more than 60 locations throughout North America. And, having been in the refractories business for more than 80 years, A. P. Green can also provide the expertise and thorough technical assistance that you might require.



# **INSBLOK-19**

TECHNICAL DATA

MAXIMUM RECOMMENDED TEMPERATURE  Used Behind Rigid Refractories	1900°F 1500°F	1040°C 815°C
BULK DENSITY - ASTM C303	<u>lb/ft³</u> 17 - 23	g/cm <sup>3</sup> 0.27 - 0.37
LINEAR SHRINKAGE - ASTM C356  Heated at 1900°F (1040°C) and Then Cooled	1.5	- 2.5%
MODULUS OF RUPTURE - ASTM C203  Dried at 220°F (105°C) and Then Cooled	<u>lb/in²</u> 35 - 70	MPa 0.24 - 0.48
COMPRESSIVE STRENGTH - ASTM C165 10% Deformation	lb/in²	MPa
Dried at 220°F (105°C) and Then Cooled	10 - 30 5 - 10	0.07 - 0.21 0.03 - 0.07
CORROSION ON STEEL	N	one
THERMAL CONDUCTIVITY - ASTM C177	Btu-In	
At a Mean Temperature of	ft2hr°F	W/m°C
200°F (95°C)	0.5	0.07
400°F (205°C)	0.6	0.09
600°F (315°C)	0.7	0.10
800°F (430°C)	0.8	0.11
1000°F (540°C)	0.9	0.13
1200°F (650°C)	1.1	0.16

The test data shown are based on average results of control tests and are subject to normal variation on individual tests. Accordingly, test data cannot be taken as establishing maximum or minimum specifications. Sample averages would be expected to meet a unilateral limit for each property 90% of the time.



#### TECHNICAL DATA

#### INSWOOL-HP BLANKET

2400°F Alumina-Silica Ceramic Fiber Blanket, High Purity Manufactured at Pryor, Oklahoma

For Intermittent Use ----- 2400°F

For Continuous Use ----- 2250°F

MAXIMUM RECOMMENDED TEMPERATURE

COLOR	White	
FIBER DIAMETER	3 - 5 Microns	
INDEX OF REFRACTION	1.552	
SPECIFIC GRAVITY	2.55	
FIBER LENGTH	8 in. Average 12-16 in. Max.	20 cm. Average 30-40 cm. Max.
TENSILE STRENGTH 8 lb/ft <sup>3</sup> (128 kg/m <sup>3</sup> ) BLANKET	· 10-15 lb/in <sup>2</sup>	0.7-1.0 kg/cm <sup>2</sup>
PERMANENT LINEAR CHANGE  Per Cent Shrinkage  24 Hours at 2000°F (1095°C) Soaking Temper  24 Hours at 2200°F (1205°C) Soaking Temper  24 Hours at 2400°F (1315°C) Soaking Temper  The permanent linear change in a 24 hour test is will be experienced in actual service. Four hou	rature 2.5 - 2.9% rature 3.6 - 4.4% representative of the	shrinkage that
A STATE OF THE CONTRACT OF THE PROPERTY AND STATE OF THE PROPERTY OF THE PROPE	4 lb/ft <sup>3</sup> 6 lb/ft <sup>3</sup> (64 kg/m <sup>3</sup> ) (96 kg/m <sup>3</sup> ) 0.5 (.06) 0.5 (.06) 0.9 (.11) 1.6 (.20) 1.4 (.17)	8 lb/ft <sup>3</sup> (128 kg/m <sup>3</sup> ) (0.4 (.05) (.08 (.10) (.11 (.14)
CHEMICAL ANALYSIS  Alumina - Al <sub>2</sub> 0 <sub>3</sub> Silica - Si0 <sub>2</sub>	49.0 - 50. 50.0 - 51.	.0%

The test data shown above are based on average results of control tests and are subject to normal variation on individual tests. These results <u>cannot</u> be taken as maximum or minimum requirements for specification purposes.

Less Than 0.5%

1315°C

1230°C

MEXICO, MISSOURI 65265 U.S.A.

TECHNICAL DATA

### INSWOOL PAPER

# 2300°F Alumina-Silica Ceramic Fiber Paper

MAXIMUM RECOMMENDED TEMPERATURE  For Continuous Use  Fiber Melting Point	2300°F Over 3000°F		1260°C Over 1650	°c
COLOR		White		
NOMINAL THICKNESS	1/32" (0.8 mm)	1/16" (1.6 mm)	$\frac{1/8"}{(3.2 \text{ mm})}$	1/4" (6.4 mm)
CALIPER/DENSITY				
Rated Thickness Compressed - mils		40.0	80.0	
(mm) =	(.508)	(1.02)	(2.03)	
Density at Rated Thickness - 1b/ft		15.9	15.8	
(g/cc)		(.254)	(.253)	
Uncompressed Thickness - mils		120.0	190.0	250.0
(mm) <sub>3</sub>	(1.52)	(3.05)	(4.83)	(6.35)
Density Uncompressed - 1b/ft	5.8	5.3	6.6	6.7
(g/cc)	(.093)	(.085)	(.106)	(.107)
COVERAGE				
Ft 2/1b	34.5	18.9	9.5	7.1
(m <sup>2</sup> /kg)	(7.04)	(3.86)	(1.90)	(1.46)
		,,	,	,,
STRENGTH	10.0			
Tensile - Machine Direction - 1b/in		10.0	22.0	29.0
(kg/cm)		(1.8)	(3.9)	(5.2)
- Cross Direction - lb/in		7.0	11.0	15.0
2 (kg/cm)	(.71)	(1.3)	(2.0)	(2.7)
Mullen Burst - 1b/in <sup>2</sup> (kg/cm) (kg/cm)	6.0	12.0	30.0	40.0
(kg/cm <sup>-</sup> )	(.42)	(.84)	(2.1)	(2.8)
THERMAL CONDUCTIVITY		Btu-in		kgal-m
at a Mean Temperature of		ft hr F		m hr C
400°F (205°C)		0.35		0.04
1000 F (540 C)		0.65		0.08
2000°F (1095°C)		1.55		0.19
LOSS ON IGNITION			6.0%	
CHEMICAL ANALYSIS				
Fibers Only			24	
			46.0 - 49.0%	
Alumina - Al <sub>2</sub> O <sub>3</sub>			50.0 - 53.0%	
Iron Oxide - Fe_O			0.1 - 0.7%	
Iron Oxide - Fe 203			0.1 - 0.79	
Alkalies - Na 20			Trace - 0.4%	
2				

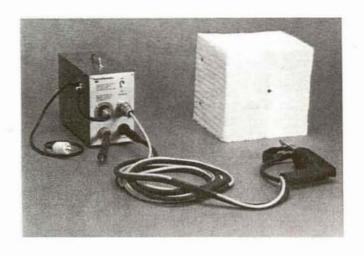
The test data shown above are based on average results of control tests and are subject to normal variation on individual tests. These results cannot be taken as maximum or minimum requirements for specification purposes.

#### Kaowool® Ceramic Fiber

# PYRO-BLOC® Y<sup>™</sup>-MODULE R GRADE ZR GRADE

- Monolithic, edge-grained ceramic fiber module
- Available in uncompressed densities from 8 pcf to 15 pcf
- · One-shot center-fired stud
- · Extremely fast, efficient installation
- · High density fiber resists mechanical abuse

The Pyro-Bloc Y-Module is an edge-grained ceramic fiber block used for lining industrial furnaces. The modules are manufactured from a high purity blend of raw materials which are used to produce either the R Grade (aluminasilica) or ZR Grade (alumina-zirconia-silica) ceramic fibers. The Pyro-Bloc Y-Module utilizes a specially designed 316 stainless steel internal support system and industry standard Pyro-Bloc stud system. In addition, the Y-Module has no hot face, cold face, or side constrictions which permit maximum moduleto-module compression during installation. The Y-Module uses the proven center-fire, one-step weld system which eliminates the need for pre-laid out stud patterns. This allows for the fastest installation of any module system now available in the marketplace. The Y-Module comes complete with internal support system and stud already in place.



#### **Physical Properties**

	R GRADE	ZR GRADE
Color	white	white
Density, pcf	8, 10, 12, 15	10, 12, 15
Thickness, in. (standard)	3 - 12	- 3 - 12
Maximum temp, rating, °F	2400	2600
Melting point, °F	3200	3200
Continuous use limit,		
up to °F	2200	2450

#### **Chemical Analysis**

(% weight basis)

	RGRADE	ZR GRADE
Alumina Al <sub>2</sub> O <sub>3</sub>	47	37.5
Silica SiO2	53	47
Zirconia ZrO2		15.5
Loss on ignition	trace	trace
Other	trace	trace

Thermal Ceramics • P. O. Box 923 • Augusta, Georgia 30903-0923

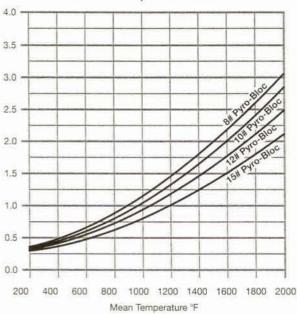
Supersedes 5 14-505 dated November 1992

### **Product Information**

#### Kaowool® Ceramic Fiber2

### **Thermal Properties**

Pyro-Bloc Y-Modules 8#, 10#, 12#, 15# Thermal conductivity at various densities



#### Standard Sizes

- 12" x 12" Modules from 3" to 12" Thickness in 1" increments
- 12" x 24" Dual Modules from 3" to 12" in 1" increments
- 6" x 12" Split Long Fiber Modules from 3" to 12" in 1" increments
- 12" x 6" Split Short Fiber Modules from 3" to 12" in 1" increments
- Carton size is 12" x 12" x 37"

#### Pyro-Bloc Y-Module Installation

Pyro-Bloc Y-Modules are installed by the instant action of our industry standard Pyro-Bloc stud and stud gun. In one easy step the module is positioned against the furnace shell, securely welded\*, and tightened into place in less than three seconds. This unique process self checks and quality tests each and every weld for absolute integrity. The Pyro-Bloc installation procedure eliminates the need for a time consuming stud layout and prewelding of anchors or brackets. The Pyro-Bloc Y-Module is easy to cut and fit in the field for special shape requirements.

\* Independent test results on the strength of the Pyro-Bloc stud are available upon request.

### Typical Applications

- Annealing furnaces
- Heat treating furnaces
- Process heaters
- Ethylene furnaces
- Forge furnaces
- Steam flood units
- Homogenizing furnaces

Data are average results of tests conducted under standard procedures and are subject to variation. Results should not be used for specification purposes.

Refer to the Material Safety Data Sheet (MSDS) for recommended work practices and other product safety information.

For further information, contact your nearest Thermal Ceramics technical sales office or your local Thermal Ceramics authorized astributor. You may also fax us toll-free at 1-800-KAOWOOL or write to Thermal Ceramics, P. O. Box 923, Dept. 140, Augusta, GA 30903.

AUGUSTA, GA (706) 796-4280 Fax: [706) 796-4324 BATON ROUGE. LA (504) 293-5225 Fax: (504) 292-4081 BIRMINGHAM, AL (205) 988-0998 Fax: (205) 988-3095 CHARLOTTE, NC (704) 552-0066 Fax: (704) 552-5032 CHICAGO, IL (708) 515-0808 Fax: (708) 515-1103 CLEVELAND, OH (216) 831-4444 Fax: (216) 831-4485 DALLAS, TX (214) 980-1459 Fax: (214) 490-3728 DETROIT, MI (313) 459-6601 Fax: (313) 459-7860 FAIRFIELD, CA (707) 427-0283 Fax: (707) 427-0708 HOUSTON, TX (713) 861-9161 Fax: (713) 861-4823 LA MIRADA, CA (310) 921-8657 Fax: (714) 521-4662 NEW YORK, NY (610) 293-0750 Fax: (610) 254-0398 PHILADELPHIA, PA (610) 293-0750 Fax: (610) 254-0398 PITTSBURGH, PA (412) 364-5711 Fax: (412) 364-7543 PORTLAND, OR (503) 252-8557 Fax: (503) 252-5905 ST. LOUIS, MO (314) 997-6330 Fax: (314) 997-1273 TULSA, OK (918) 455-2616 Fax: (918) 455-6191 WINTER PARK, FL (407) 359-0031

Fax: (407) 359-0670

INTERNATIONAL (706) 796-4216 Fax: (706) 796-4262 BURLINGTON, ONTARIO, CANADA (905) 335-3414 Fax: (905) 335-5145



#### HARBISON-WALKER REFRACTORIES

Division of Dresser Industries, Inc.

One Gateway Center, Pittsburgh, Pennsylvania 15222

### H-W LIGHTWEIGHT ES REFRACTORY

Techni	cal	Data:

Physical Properties: (Typical)	English Units	SI Units
Maximum Service Temperature	2,300°F	1,260°C
	1b/ft <sup>3</sup>	kg/m <sup>3</sup>
Dry Weight Required for Casting	76	1,215
Approximate Amount of Water Required Per 100 Lbs. 3½ to Per 45.36 Kg.  Bulk Density After Drying at 230°F (110°C)	4 U.S. Gallons	to 15.14 Liters $\frac{kg/m^3}{1,280}$
Modulus of Rupture After Drying at 230°F (110°C) After Heating at 1000°F (540°C) After Heating at 1500°F (815°C) After Heating at 2300°F (1260°C)	1b/in <sup>2</sup> 300 to 500 200 to 400 200 to 400 300 to 500	kPa 2,100 to 3,400 1,400 to 2,800 1,400 to 2,800 2,100 to 3,400
After Heating at 1000°F (540°C) After Heating at 1500°F (815°C)	1,100 to 2,100 800 to 1,500 800 to 1,500 1,000 to 2,000	7,600 to 14,500 5,500 to 10,300 5,500 to 10,300 6,900 to 13,800
Permanent Linear Change, % After Drying at 230°F (110°C) After Heating at 1000°F (540°C) After Heating at 1500°F (815°C) After Heating at 2300°F (1260°C)	Neglig: -0.1 to -0.1 to +1.0 to	-0.4 -0.4
Thermal Conductivity:		

Temperature <sup>O</sup> F	Btu/hr. ft. <sup>2</sup> °F/in.	Temperature <sup>O</sup> C	Kcal/hr. m <sup>2</sup> °C/
500 1000 1500	2.40 2.58 2.70	400	0.310
2000	2.90	800 1000	0.335

HJ-11

=== technical data === (Continued)



#### H-W ES CASTABLE C (Continued)

All data based on vibration cast specimens. ASTM procedures, where applicable, used for determination of data.

All data subject to reasonable deviation and therefore should not be used for specification purposes.

Description: A coarse fireclay aggregate castable

bonded with a standard calcium-aluminate

binder.

Features: Particularly adapted for casting massive,

heavy sections. It has high compressive strength and good abrasion resistance. Low shrinkage, good resistance to spalling and thermal cycling. "VIBRATION CASTING

REQUIRED."

Uses: Excellent for chain sections of rotary

kilns and cooler lower sidewalls as well

as car top in heating furnaces.

Shipping Data: Shipped in multi-wall moisture-proof sacks

of 100 lbs. (45.36 Kg.) net weight.



### H-W LIGHTWEIGHT ES REFRACTORY (Continued)

# Chemical Analysis: (Calcined Basis) (Approximate)

Silica	(Si0 <sub>2</sub> )	39.1%
Alumina	(Al <sub>2</sub> 0 <sub>2</sub> )	35.7
Titania	(Tita)	1.9
Iron Oxide	$(Fe_2\theta_3)$	6.7
Lime	(Cab)	13.2
Magnesia	(Mg0)	1.2
Alkalies	$(Na_20+K_20+Li_20)$	2.2

All data based on cast specimens. ASTM procedures, where applicable, used for determination of data.

All data subject to reasonable deviation and therefore should not be used for specification purposes.

Description:	An intermediate	strength insulating castable,
	with a standard	calcium-aluminate binder.

Features:	Combines good strength with high insulating
	value; excellent volume stability. May be cast
	or gunned in place; suitable for hot face or
	back-up linings.

Uses:

Reheating furnace subhearths; forging furnace doors and roofs; fluid coker and drums for incinerators; rotary kiln feed end housing; process furnace heaters; fluid catalytic cracking

unit walls; crude heaters.

Shipping Data: Shipped in multi-wall moisture-proof sacks of 100 Lbs. (45.36 Kg.) net weight.



#### HARBISON-WALKER REFRACTORIES

North American Operations, Dresser Industries, Inc. One Gateway Center, Pittsburgh, PA 15222

### H-W 61-65

CIASSILICACION: HIGH ALUMIIMA DILC	Classification:	High-Alumina	Brick
------------------------------------	-----------------	--------------	-------

Physical Data: (Typical	<u>)</u>	Engl	Lish	Units	SI	Jnit	ts
		1	Lb/f	t <sup>3</sup>	kg/	/m <sup>3</sup>	
Bulk Density		149	to	153	2,385 to	2	,450
Apparent Porosity, %				-	12.0 to	0 10	6.0
		1	Lb/i	Ln <sup>2</sup>	kl	?a	
Cold Crushing Strength		7,000	to	10,000	48,300	to	69,000
Modulus of Rupture	*	2,000	to	3,000	13,800	to	20,700
Reheat Test Permanent Linear Chang At 2910 F (1600°C)	re %			+0.5 to	+1.5		
Load Test, 25 psi (172 } % Linear Subsidence At 2640°F (1450°C)	(Pa)			2.0 to	4.0		
Chemical Analysis: (Approximate)							
Silica	(Si0 <sub>2</sub> )			44.2%			
Alumina	(Al <sub>2</sub> 0 <sub>3</sub> )			50.7			
Titania	(TiO <sub>2</sub> )			2.3			
Iron Oxide	(Fe <sub>2</sub> 0 <sub>3</sub> )			1.5			
Lime	(Ca0)			0.1			
Magnesia	(Mg0)			0.3			
Alkalies	(Na <sub>2</sub> 0+K <sub>2</sub> 0+L	i <sub>2</sub> 0)		0.9			

The above data are typical of the properties of commercial 9" Straight brick. The data are subject to reasonable variations and therefore should not be used for specification purposes.

ASTM Test Methods, where applicable, used in determination of data.

HA-1



## Material Safety Data Sheet for Calcium Oxide

### Section I - Identity

Manufacturer's name and address:

Ash Grove Cement Company

8900 Indian Creek Parkway

P. O. Box 25900

Overland Park, KS 66225

Emergency Telephone Number: Information Telephone Number:

(913) 451-8900 (913) 451-8900

Chemical Name and Synonyms:

Calcium oxide. CaO. quicklime, lime, unslaked lime

Trade Name and Synonyms:

Pebble Quicklime, Cal-Max

CAS No.:

1305-78-8

### Section II - Hazardous Ingredients

	CAS Number	OSHA PEL	1994-1995 ACGIH TLV
Quicklime, CaO	1305-78-8	5 mg/m³	2 mg/m³
Quartz. crystalline silica	14808-60-7	$PEL = \frac{10 \text{mg/m}^3}{\% \text{SiO}_2*+2}$	0.1*

Calcium oxide may contain greater than 0.1% quartz, crystalline silica. Chronic exposure above the allowed limit to the respirable dust of materials containing crystalline silica or quartz may cause silicosis.

### \*Respirable fraction

ACGIH American Conference of Governmental Industrial Hygienists

OSHA

Occupational Safety and Health Administration

PEL

Permissible Exposure Limit

TLV

Threshold Limit Value

### Section III - Chemical and Physical Data

Chemical Family:

Inorganic Base

Evaporation Rate: Not Applicable

Molecular Weight:

56.10

Boiling Point: 5162°C

Melting Point: 4737°F.

Specific Gravity:

3.2 - 3.4

Vapor Density:

(Air=1) Not Applicable

Solubility in Water:

0.131 g/100 ml at 10°C; 0.07 g/100 ml at 80°C

Appearance and Odor: White granular or powder: faint earthy odor

### Section IV - Fire and Explosion Hazard Data

Flash Point: Not Applicable: calcium oxide is noncombustible and not explosive.

Flammable or Explosive Limits: Not Applicable

LEL: Not Applicable

UEL: Not Applicable

Extinguishing Media: Not Applicable

Special Fire Fighting Procedures: Calcium oxide in itself is incombustible. In contact with water, product will hydrate evolving heat. Warning: Sufficient heat can be created during hydration to ignite paper, wood, rags or other combustible materials. CAUTION: Saturated water solutions of calcium oxide can have pH of 12-12.49 See Section VII for appropriate precautions.

Firefighting Media: Dry chemical, flooding quantities of water as spray, foam. For larger fires, use water spray, fog or alcohol foam. DO NOT use carbon dioxide or halogenated extinguishing agents.

CAUTION: Saturated water solutions of hydrated lime can have pH of 12-12.49 at temperatures of 25°C or above. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: Heat generated from reaction with water can start fires.

### Section V - Health Hazard Data

Calcium Oxide can contain quartz greater than 0.1%. Chronic exposure by inhalation to respirable size quartz dust at levels exceeding exposure limits has caused silicosis, a serious and progressive pneumoconiosis which can be disabling and in extreme instances, lead to death. Symptoms may appear at any time, even years after exposure has ceased. These symptoms may include shortness of breath, difficulty in breathing, coughing, diminished work capacity, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest x-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure. The International Agency for Research in Cancer (IARC) has determined that quartz crystalline silica is carcinogenic to humans when inhaled from occupational sources.

### Section V - Health Hazard Data - (Continued)

Route(s) of Entry: Inhalation; skin; eyes; ingestion

- 1. Inhalation: corrosive
  - a. Acute exposure: Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
  - b. **Chronic exposure:** Bronchial irritation with chronic cough is common; chronic overexposure may result in silicosis.
  - c. First aid: Remove from exposure; move to fresh air immediately. Keep affected person warm and at rest. Get medical attention.
- 2. Skin contact: corrosive
  - a. Acute exposure: During prolonged skin contact the substance can penetrate the unprotected skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility allows further penetration that may continue for several days. The extent of damage depends on duration of contact.
  - b. Chronic exposure: A chronic dermatitis may follow repeated contact.
  - First aid: Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing.
     Bandage securely, but not too tightly. Get medical attention.
- 3. Eye contact: corrosive
  - a. Acute exposure: Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction which can lead to and may cause blindness.
  - b. Chronic exposure: Prolonged contact may cause conjunctivitis.
  - First aid: Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
- 4. Ingestion: corrosive. If ingested, consult a physician immediately.

Calcium Oxide listed as an OSHA Carcinogenic: NO By NTP: NO By IARC: NO Quartz listed as an OSHA Carcinogen: NO By NTP: YES (Group 2A) By IARC: YES (Group 1)

Medical conditions generally aggravated by exposure: Respiratory disorders or diseases, dermatitis or other skin disorders may be aggravated by exposure.

### Section VI - Reactivity Data

Stability: Reacts rapidly with water to produce heat and form calcium hydroxide. Will gradually react with the carbon dioxide in air to form calcium carbonate; stable in absence of moisture and carbon dioxide.

Conditions to avoid: Contact with water, acids.

Incompatibility (materials to avoid): May react violently and incandescently with boric oxide, hydrogen fluoride, phosphorous pentoxide, chlorine trifluoride, and fluorine. Reaction with halogenated compounds may cause ignition.

Hazardous Polymerization: Will not occur.

Hazardous Decomposition or By-Products: None.

a#++ ↓ #1 44	SECTION I — IDENTIFICATION OF PRODUCT	
<b>800) 424-83</b> 0(		MANUFACTURER'S NAME
<b>姚</b> .	150 South Main Street Fremont, Nebraska 68025	ADDRESS
\$ Jan (1)	CLEAN CROPINES AMINE D	TRADE NAME AND EVRONYMS
State party	2.4-0 course: 2.5 inches epinating and Committee and MCPP Dimension (Committee and Committee and Com	CHIMICAL MAME AND SYNONYMS
Memory (n) Sary (feet)	Phenoxy herbickie mixture	CHRIST FAMILY
-	2.4-0 entre: (Contract property of the Contract  AND SYNONYMS	

SECTION II — HAZARDOUS INGREDIEN	TS OF MIXILURES
COMPONENT	
Dimethylamine salt of 2,4-D (CAS: 2006-39-1)	30.56 ( ACCENTENTIAL TOMORE For Acid)
Dimethylamine salt of MCPP (CAS: 13791-92-9) Dimethylamine salt of Dicamba (for azid: CAS: 1918-00-9) Inert Ingredients (Net Hazardous)	16.34 Norm established 2.77 Norm established 50.35

· · · · · · · · · · · · · · · · · · ·	SECTION III —	PHYSICAL DA	TA LORD SAMELED SAME
APPEARANCE AND GOOR	Clear, light amber-colored liquid with typ	pical phenoxy herbicide o	doc
BOILING POINT (DEGREES FAMILIMENT)	212°F (100°C)	CHARGE (1) 1.13	9.42 bs.gal.
WAPON PRESSURE (MM. OF MERCURY)	approx. 21mmHg (Reid-ASTM D323)	(NY NOLLING)	>50% (water)
WAPOR DEMOTY (AIR = 1)	approx. 0.021 (Hauser HCR TM007)	SUPPORTUGUE = 1)	Not excitable Lower than Bully! Acetain
SOLUBILITY IN WATER	Miscible in welst		- Company Comp

SECTION IV — FIRE AND I	EXPLOSION HAZ	ZARD, DATA
PLASH POINT DOS NOT RESH. (PPECIFY METHOD/DEGREES PARTIEMNEST) NOT Spoliceble.	PLANMABLE LIMITS (PERCENT BY VOLUME)	Avenue
res sixtuecidore a usoi. Considered non-combustible; use medium appropriate to surroyndin	g fire. Dry Chemical, Foam, C	O., Water spray of tog.
aracies, rus resimus fracesumes Simelia and furnes from the may contain hazardous components. Use	self-contained breathing app	eratus and full protective cigining.
unusual ring and extraction magazine If water is used to fight fire or cool containers, contain run-off by diking	to prevent contamination of v	viter supplies.

	(	SECTION V REA	CTIVITY DATA	
STABILITY	LINETABLE STABLE	CONDITIONS TO MOID  Expective heat:		The state of the s
Strong oxidizate	Materials to droid , golds.	er en en en en en en en en en en en en en		g the second second second second second second second second second second second second second second second
MAZAMBONE DECO Hydrogen Chlor in a fire cituation	teraeman phoaucte: ide (HCI), ather chiorine-i n. Incomplete combustion	containing compounds, axides of n may lead to formation of carbon w		un hazardous materials may be formed physients
HAZARDOUS POLIMEREATION	MATE NO. GOOM	None known.	The second secon	and the second s

READ THE SACK.



### North American Refractories Co.

Cleveland, Ohio 44115



Brand

NIKE

Class Plant Super-Duty Brick Farber, Missouri

### **TYPICAL TEST DATA**

### **PHYSICAL PROPERTIES**

Pyrometric Cone Equivale	ent, P.C.E.	34	
Bulk Density, pcf - Mg/M	3	148.6 - 2.38	}
Cold Crushing, psi - MPa		9200 - 63.43	3
Modulus of Rupture, psi - @ 70 <sup>o</sup> F, (21 <sup>o</sup> C) @ 2300 <sup>o</sup> F, (1260 <sup>o</sup> C) @ 2700 <sup>o</sup> F, (1480 <sup>o</sup> C)	MPa .	2400 - 16.55 2200 - 15.17 400 - 2.76	7
Apparent Porosity, %		15.3	
Apparent Specific Gravity		2.82	
Abrasion Test, cm <sup>3</sup>	· · · · · · · · · · · · · · · · · · ·	8	
Thermal Shock, % Streng	th Loss	43	
Load Test, 25 psi (172 Kp % Subsidence @ 2640	oa) <sup>O</sup> F, (1450 <sup>O</sup> C)	1.7	
Creep - Deformation Betv Under 28.4 psi (2	veen 20th & 50th Hour ? kg/cm <sup>2</sup> ) @ 2462 <sup>0</sup> F, (1350 <sup>0</sup> C)	0.33,	
Reheat Test, % Linear Ch After Five Hours @ 2910	ange ) <sup>0</sup> F, (1600 <sup>0</sup> C)	-0.5	
TYPICAL CHEMICAL	. ANALYSIS, Wt. %		
Silica	(SiO <sub>2</sub> )	47.0	

The data given above are determined by standard A.S.T.M. test procedures where applicable. These results cannot be taken as requirements for specification purposes.

 $(Al_2\bar{O}_3)$ 

(Fe<sub>2</sub>O<sub>3</sub>)

 $(TiO_2)$ 

(CaO)

(MgO)

(Na<sub>2</sub>O-K<sub>2</sub>O)

Form - Fireclay

Alumina

Titania

Lime

Iron Oxide

Magnesia

Alkalies

C9

48.7

1.3 2.2

0.1

0.2

0.3



### AND SAFE HANDLING AND DISPOSAL INFORMATION

02/21/91 PAGE 1 OF 3

7EP MANUFACTURING COMPANY
ST IN MAINTENANCE PRODUCTS

ISSUE DATE: 01/15/91 ZEP E.S.P.

SUPERSEDES: 07/16/90 PRODUCT NUMBER: 0848

SECTION I - E M E R G E M C Y C O M T A C T S

ZEP MANUFACTURING COMPANY TELEPHONE: (404)352-1680 BETWEEN 8:00 AM-5:00 PM (EST)

P.O. BOX 2015 NON-OFFICE HOURS, WEEKENDS, AND HOLIDAYS: AREA CODE 404

ATLANTA, GEORGIA 30301 435-2973, 996-0899, 351-2952, 971-3367, 432-2873

DISTRICT OF COLUMBIA (202)483-7616 ALL CALLS RECORDED

SECTION II - H A Z A R D O U S I N G R E D I E M T S

 $\overline{ extsf{VV}}$ 9275000; OSHA DUST LIMIT-RMG/M3 (FOR FOWDERS ONLY).

	TLV	EFFECTS	% IN
DESIGNATIONS	(PPM)	(SEE REVERSE)	PROD.
** DIPROPYLEME GLYCOL METHYL ETHER ** DIPROPYLEME	100	CBL	< 5
GLYCOL MONOMETHYL ETHER: CAS# 34590-94-8; RTECS#			
JB1575000; OSHA PEL-100 PPM; OSHA/ACSIH STEL-			
150 PPM			
** TETRASODIUM ETHYLENEDIAMINE TETRAACETATE **	N/D		< 5
ETHYLEMEDINITRILO TETRA-ACETIC ACID, TETRA SODIUM			
SALT: EDTA: CAS# 64-02-8: RTECS# AH4025000: QSHA PEL-			
N/D			
** SODIUM DODECYLBENZENE SULFONATE ** LINEAR ALKYL	N/D	IRR	< 5
ARYL SODIUM SULFONATE; CAS# 25155-30-0;			
RTECS# DB4825000; DSHA PEL N/D			
** SODIUM METASILICATE ** SILICIC ACID (H2-SI-O3) DI-	N/D	COR	₹ 5
ODIUM SALT: WATER GLASS: DAS# 6834-92-0; RTECS#			

SPECIAL NOTE: ADVERSE HEALTH EFFECTS WOULD NOT BE EXPECTED UNDER RECOMMENDED CONDITIONS OF USE SO LONG AS PRESCRIBED SAFETY PRECAUTIONS ARE PRACTICED.

SECTION III - HEALTH HAZARD DATA

ACUTE EFFECTS OF OVEREXPOSURE:

PRODUCT IN CONCENTRATED FORM IS A SEVERE EYE IRRITANT. OVER-EXPOSURE MAY LEAD TO EYE TISSUE DAMAGE WHICH CAN BE PERMANENT. SKIN CONTACT MAY PRODUCE IRRITATION. EREXPOSURE BY INHALATION OR SKIN ABSORPTION MAY PRODUCE MILD CENTRAL NERVOUS STEM DEPRESSION, CHARACTERIZED BY HEADACHE, DIZZINESS, NAUSEA AND VOMITING. INHALATION MAY PRODUCE UPPER RESPIRATORY IRRITATION CHARACTERIZED BY SORE THROAT OR DIFFICULTY IN BREATHING.

INGREDIENTS IN THIS PRODUCT MAY AGGRAVATE EXISTING SKIN, EYE, OR RESPIRATORY

DISORDERS.

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety information is intended to aid you in devising safe procedures for using our products and to assist to the safety of regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen—Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP). the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only—Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL: Flammable—At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic—The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion—A primary route of exposure through swallowing a liquid or solid (see below).

INH: Inhalation—A primary route of exposure through breathing of vapors (see below).

IRR: Irritant—Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable—Category is not appropriate for this product.
N/D: Not Determined—Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit-The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer—Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value—A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic—The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This timeweighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalizedsystemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products, Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products. may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.



### AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 2 OF 3

ISSUE DATE: 01/15/91 ZEP E.S.P.

SUPERSEDES: 07/16/90 PRODUCT NUMBER: 0848

SECTION III - H E A L T H H A Z A R D D A T A (CONTINUED)

CHRONIC EFFECTS OF OVEREXPOSURE:

REPEATED OR PROLONGED SKIN CONTACT MAY PRODUCE CHRONIC INFLAMMATION OR DERMATIT-IS, CHARACTERIZED BY REDNESS, SCALING, OR ITCHING, REPEATED EYE EXPOSURE MAY

PRODUCE CHRONIC INFLAMMATION OF THE EYE OR CORNEAL DAMAGE.

NONE OF THE INGREDIENTS ARE LISTED AS CARCINOGENS BY IARC, NTP, OR OSHA.

EST'D PEL/TLV: NOT ESTABLISHED PRIMARY ROUTES OF ENTRY: N/A

HMIS CODES: HEALTH 2: FLAM. 0: REACT. 0: PERS. PROTECT. B : CHRONIC HAZ. NO

HMIS CODES. REALIH EFFEHM. VFREHOI. VFREMS. FROIECI. B. FCHRUMIC MAZ. MO

FIRST AID PROCEDURES:

SKIN : IMMEDIATELY FLUSH CONTAMINATED SKIN WITH PLENTY OF WATER FOR AT LEAST 15

MINUTES. GET MEDICAL ATTENTION IF IRRITATION DEVELOPS.

EYES : IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, OC-

CASIONALLY LIFTING UPPER AND LOWER LIDS. GET MEDICAL ATTENTION AT ONCE.

\*NMALE: MOVE EXPOSED PERSON TO FRESH AIR. IF IRRITATION PERSISTS,

GET MEDICAL ATTENTION PROMPTLY.

THEEST: IF THIS PRODUCT IS SWALLOWED, DO NOT INDUCE VOMITING. IF VICTIM IS

CONSCIOUS GIVE PLENTY OF WATER TO DRINK. GET MEDICAL ATTENTION AT CHOE.

SECTION IV - S P E C I A L P R O T E C T I O N I N F O R M A T I O N

PROTECTIVE CLOTHING : WEAR NEOPRENE, NITRILE, OR NATURAL RUBBER GLOVES OR

GLOVES WITH PROVEN RESISTANCE TO THE INGREDIENTS LISTED.

EYE PROTECTION : WEAR SPLASH-PROOF SAFETY GOGGLES ESPECIALLY IF CONTACT

LENSES ARE WORM.

RESPIRATORY PROTECTION: IF VENTILATION IS INADEQUATE, WEAR A PROPERLY FITTING

MSHA OR OSHA-APPROVED RESPIRATOR.

VENTILATION : VENTILATION SHOULD BE EQUIVALENT TO OUTDOORS. USE EX-

HAUST FAMS AND OPEN WINDOWS IN ENGLOSED SPACES.

SECTION V - P H Y S I C A L D A T A

BOILING POINT (F) : 220 SPECIFIC GRAVITY : 1.05 VAPOR PRESSURE(MMHG): N/D PERCENT VOLATILE BY VOLUME (%) : 85.9

VAPOR DENSITY(AIR=1): N/D EVAPORATION RATE(WATER =1): 1.0

SOLUBILITY IN WATER : COMPLETE PH(CONCENTRATE) : 12.5-13.0

PH(USE DILUTION OF 1%

(M)

APPEARANCE AND DOOR : A THIN, DARK BLUE LIQUID HAVING LITTLE ODOR

SECTION VI - FIRE AND EXPLOSION DATA

►ASH POINT(F) (METHOD USED): N/A FLAMMABLE LIMITS LEL N/A UEL N/A

EXTINGUISHING MEDIA : NON-COMBUSTIBLE.

SPECIAL FIRE FIGHTING: NUNE UNUSUAL FIRE HAZARDS : NUNE ); ii.O-ii.5

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to ald you in devising safe procedures for using our products and to assist you in company with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen—Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only—Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL: Flammable—At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic—The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion—A primary route of exposure through swallowing a liquid or solid (see below).

INH: Inhalation—A primary route of exposure through breathing of vapors (see below).

IRR: Irritant—Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable—Category is not appropriate for this product.

N/D: Not Determined—Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer—Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value—A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic—The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time-weighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.



AND SAFE HANDLING AND DISPOSAL INFORMATION

tu.≢

Lit

01/119/91 "ŢŢ

Ų" ⊫i YUMBER: 00400

4(° 1---1---30 ŢΠ D **(**) ---4 1--4 41. 1--------: C.J 7 

ZEP MANUF,

MAINTENANCE

PRODUCTS

STABILITY
FOLYMERIZATION
HAZARDOUS DECOMPO

Š 

ŽŽ

T OCCUR.

COMPOUNDS ЙŞ ğ ⊫i "Τ| r-i iri Ci

**4**--4 2 4(<u>.</u> |ee| |---| |---| H 'n bot 1> 1,3 F---\$ 1,ITE 13  $\mathbf{f}$ ĽľI 1: 77 73 Γ.1 [7]  $\Box$ 33 m

STEPS TO BE TAKEN IN CASE MOSSERVE SAFETY PRECAUTIONS ON INERT ABSORBENT MATERIAL SPECIFICATION CONTAINER FOR TELL WITH WATER
TO THE SECTIONS
TO THE SECTIONS
TO THE SECTIONS
TO THE SECTIONS
TO THE SECTION 19860 OR SPILLED: 1): PIOK UP AND PLAC AREA THOROUGHLY WI 173 U SPS PÖ 

SOME COLLECTED, SPENT TO LAMOFILLS UNLESS
SOME COLLECTED, SPENT USE-DILUTIONS HAY REC
A PERMITTED TREATMENT/STORAGE/DISPOSAL FACT
IN TOTAL AMOUNTS OF 220 L85. OR LESS PER MI
OR INDUSTRIAL WASTE LANDFILL, IF COMPANY EN
PUBLICLY OWNED TREATMENT WORKS, NEUTRALIZATION OF ACAGENCIES FOR PROPER DISPOSAL METHOD IN SOME CONTRACT RANGA R LESS FER MONTH MAY I IF COMPANY EFFLUENT IN MAY BE POSSIBLE. CO TACHLITY K G K IDIFIED. UNUSABLE PRODUCT A E DISPOSAL AS A HAZARDOUS W Y. IN MOST STATES HAZARDOUS MAY BE DISPOSED OF IN A OH BUT IS ULTINATELY TREATED B OF SPENT TANK-SOLUTIONS WI CONSULT LOCAL, STATE AND 新聞 

30 (1) (3) 1: T. Fa 和政府 111 Ö ui 000

SECTION 1-4 [8] ı 1.11 "11 171 1,71 1001 T: 'n 30 m  $(\Box)$ Ţ. l.... ---1---1 , mg, LEI

d E I I I I E 

PRECAUTIONS STORE TIGHTL KEEP PRODUCT A LONGORA TO BE TAKEN WHEN .Y OLOSED CONTAIN! CONTA TAME AND EYES. n iz ~{ PORING: 111 ONT LINE 1;> Ŷ 111 () Τij iri un 717

SWIHLDIG EN LON OC BREATHE SPRAY MISTS OR V 46 OR SHOES WHICH BECOME \_Y AND NOT REWORN UNTIL ! VAPORS

THOROUGHLY ---i ij I TANDE IJ 177 J

PROMPTLY 

THE PROPERTY OF THE PROPERTY O OR SHOES WHICH E AND/OR SAFETY OF THE REACH OF SHOWER SHOULD []] []] PAPEL PRICE で開発して

in m Ci --1 F-F 9 34 1 ----ЖI 15 34. įſŧ T[] O 311 .... 1> .... i----7  $\mathbf{r}$ ---[ 1:

9 THE TA

SO OLUBER :

MOHE SUCTONATE : N/A N/A INVENTORY T 117 SUBST 17 SUBSTANCE(#6 OE(RØ IN A SINGL OE(RØ IN A SINGL E DECEMBER ON THE O H COLUM DODMOKE

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files information is intended to aid you in devising safe procedures for using our products and to assist your products and to assist your products and to assist your products. regulations for disposal of wastes. We request that you take the time to discard any previous Machies 100 Machies product so that your files remain up-to-date.

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen—Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of lgnition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only—Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL: Flammable—At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic—The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion—A primary route of exposure through swallowing a liquid or solid (see below).

INH: Inhalation—A primary route of exposure through breathing of vapors (see below).

IRR: Irritant—Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable—Category is not appropriate for this product. N/D: Not Determined—Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit—The time-weighted average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer—Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value—A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic—The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This timeweighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this frazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalizedsystemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill," grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with-our products. may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.



### AND SAFE HANDLING AND DISPOSAL INFORMATION

05/01/91 PAGE 1 OF B

ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS ISSUE DATE: 02/01/91 ZEPELEC

to the contract may apply the second SUPERSEDES: 06/05/89 PRODUCT NUMBER: 0327 PARTIES

SECTION I - E M E R G E N C Y C O N T A C T S

P.O. BOX 2015

ATLANTA, GEORGIA 30301

ZEP MANUFACTURING COMPANY TELEPHONE: (404)352-1680 BETWEEN 8:00 AM-5:00 PM (EST) NON-OFFICE HOURS, WEEKENDS, AND HOLIDAYS: AREA CODE 404

435-2973, 994-0899, 361-2962, 971-3847, 432-2873

LOCAL POISON CONTROL CENTER ........

TRANSPORTATION EMERGENCY: CHEMTREC: TOLL FREE 1-800-424-7300 ALL CALLS RECORDED

-DISTRICT OF COLUMBIA (202)483-7616 ALL CALLS RECORDED

SECTION II - HAZARDOUS INGREDIENTS

DESIGNATIONS

1000 EIR CMS

TLV EFFECTS

(PPM) (SEE REVERSE) PROD.

@## 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE ## FLUORO-CARGON 113: FREON 113: FREON TF: CAS# 76-13-1: RTECS#

KJ4000000: OSHA PEL 1000 PPH

@ IDENTIFIES CHEMICALS LISTED UNDER SARA-SECTION 313 FOR RELEASE REPORTING.

SPECIAL NOTE: ADVERSE HEALTH EFFECTS WOULD NOT BE EXPECTED UNDER RECOMMENDED. CONDITIONS OF USE SO LONG AS PRESCRIBED SAFETY PRECAUTIONS ARE PRACTICED.

SECTION III - H E A L T H H A Z A R D D A T A

ACUTE EFFECTS OF OVEREXPOSURE:

SEVERE OVEREXPOSURE (GREATER THAN 2500 PPM) BY INHALATION CAN CAUSE CENTRAL NERVOUS SYSTEM DEPRESSION RESULTING IN HEADACHE, NAUSEA, AND DIZZINESS. IN EX-PEME CASES STUPOR, UNCONSCIOUSMESS, AND DEATH MAY RESULT. ONE INGREDIENT IN HAIS PRODUCT HAS CAÚSEÓ CARDIAC SENSITIZATION IN ANIMALS DURING TESTS AT LEVELS ABOVE 20,000 PPM, WHILE THIS EFFECT HAS BEEN IMPLICATED FOR HUMANS IT HAS NOT BEEN PROVEN; ADRENALIM INTENSIFIES THE EFFECT. SKIN OR EYE CONTACT MAY CAUSE DE-FATTING, WITH POSSIBLE IRRITATION.

INHALATION OF AEROSOL MIST MAY PRODUCE CHEMICAL PMEUMONIA.

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen—Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only—Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL: Flammable—At temperatures under 100°F., chemical gives off enough vapor to Ignite If a source of ignition is present.

HTX: Highly Toxic—The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion—A primary route of exposure through swallowing a liquid or solid (see below).

INH: Inhalation—A primary route of exposure through breathing of vapors (see below).

IRR: Irritant—Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable—Category is not appropriate for this product.

N/D: Not Determined—Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer—Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value—A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic—The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time-weighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptled" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

### **DISCLAIMER**

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.



### AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 2 OF 3

ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS ISSUE DATE: 02/01/91 ZEPELEC

SUPERSECES: 05/05/89 PRODUCT NUMBER to 032 7 WOLLAND THE

SECTION III - H E A L T H H A Z A R D D A T A (CONTINUED)

CHRONIC EFFECTS OF OVEREXPOSURE:

SKIM WHICH IS REPEATEDLY DEFATTED BY CONTACT WITH THIS PRODUCT MAY BE MORE

SUSCEPTIBLE TO IRRITATION, INFECTION, OR DERMITITIS.

MONE OF THE HAZARDOUS INGREDIENTS ARE LISTED AS CARCINOGENS BY IARC, NTP. & OSHA

EST'D PEL/TLV: 1000 PPM PRIMARY ROUTES OF ENTRY: INH.

HMIS CODES: HEALTH 1: FLAM. 1: REACT. 1: PERS. PROTECT. X : CHRONIC MAZ. NO

FIRST AID PROCEDURES:

SKIN : IMMEDIATELY FLUSH CONTAMINATED SKIN WITH PLENTY OF WATER FOR AT LEAST 15

MINUTES. GET MEDICAL ATTENTION IF IRRITATION DEVELOPS.

EYES : IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, OC-

CASIONALLY LIFTING UPPER AND LOWER LIDS. GET MEDICAL ATTENTION AT ONCE. THHALE: MOVE EXPOSED PERSON TO FRESH AIR AT ONCE. IF BREATHING HAS STOPPED, PER-

FORM ARTIFICIAL RESPIRATION, GET MEDICAL ATTENTION IMMEDIATELY.

INGEST: IF SWALLOWED, DO NOT INDUCE VOMITING, IF VOMITING OCCURS, KEEP HEAD

BELOW HIP LEVEL. GET EMERGENCY MEDICAL ATTENTION IMMEDIATELY.

SECTION IV - SPECIAL PROTECTION INFORMATION

PROTECTIVE CLOTHING : WEAR NITRILE GLOVES OR USE GLOVES WITH DEMONSTRATED

RESISTANCE TO THE INGREDIENTS IN THIS PRODUCT.

EYE PROTECTION : USE TIGHT-FITTING SAFETY GLASSES. CONTACT LENSES SHOULD

NOT BE WORN WHEN WORKING WITH THIS MATERIAL.

RESPIRATORY PROTECTION: IF VENTILATION IS INADEQUATE, WEAR A PROPERLY FITTING

MSHA OR OSHA-APPROVED RESPIRATOR.

VENTILATION : YENTILATION SHOULD BE EQUAL TO OUTDOORS. USE EXHAUST

FANS AND/OR EXHAUST HOOD IN ENCLOSED SPACES.

SECTION V - P H Y S I C A L D A T A (FOR FILL MATERIAL ONLY)

BOILING POINT (F) : 117.6F VAPOR PRESSURE(MMHG): 334 SPECIFIC GRAVITY

: 1.57

PERCENT VOLATILE BY VOLUME (%) : 100 EVAPORATION RATE(CCL4 =1): (
PH(CONCENTRATE) : N/A
PH(USE DILUTION OF ): N/A VAPOR DEMSITY(AIR=1): 2.9 =1): 0.3

SOLUBILITY IN WATER : 0.02

: N/A

APPEARANCE AND ODOR : A CLEAR, THIN LIQUID WITH A MILD SOLVENT COOR.

SECTION VI - FIRE AND EXPLOSION DATA

WASH POINT(F) (METHOD USED): NOT FLAMMABLE (CSMA)

FLAMMABLE LIMITS LEL N/A UEL N/A

EXTINGUISHING MEDIA : N/A

SPECIAL FIRE FIGHTING: DIRECT STREAM OF WATER ONTO INTACT CONTAINERS.

UNUSUAL FIRE HAZAROS : WEAR SELF-CONTAINED POSITIVE PRES. BREATHING APPARATUS.

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: 'Carcinogen—Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only—Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL: Flammable—At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic—The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion—A primary route of exposure through swallowing a liquid or solid (see below).

INH: Inhalation—A primary route of exposure through breathing of vapors (see below).

IRR: Irritant—Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable—Category is not appropriate for this product.

N/D: Not Determined—Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer—Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value—A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic—The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time-weighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.





### AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 3 OF 3 a was a secretar property or a second respective file (file).

ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS ISSUE DATE: 02/01/91 / ZEPELEC

SUPERSEDES: 06/05/89 PRODUCT NUMBER: 30327

5 2 (5)

SECTION VII - REACTIVITY DATA

5TABILITY

STABLE

INCOMPATIBILITY(AVOID) : HEAT, SUNLIGHT, STRONG OXIDIZERS, AND ACIDS

POLYMERIZATION : WILL NOT OCCUR.

HAZARDOUS DECOMPOSITION: CARBON DIOXIDE, CARBON MOMOXIDE, HYDROGEN CHLORIDE, AND

SMALL AMOUNTS OF PHOSEENE & CHLORINE GAS.

SECTION VIII - S P I L L A N D D I S P O S A L P R O C E D U R E S

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

OBSERVE SAFETY PRECAUTIONS IN SECTIONS 4 & 9 DURING SPILL CLEAN-UP. LARGE SPILLS ARE UNLIKELY DUE TO PACKAGING. SPILL MAY BE ABSORBED ON AN INERT ABSORB-ENT (EG ZEP-0-ZORB). PLACED IN A SUITABLE CONTAINER FOR DISPOSAL. WASH AREA THOROUGHLY WITH A DETERGENT SOLUTION AND RINSE WELL WITH WATER.

### WASTE DISPOSAL METHOD:

PRODUCT IS CONSUMED IN USE. DO NOT CRUSH, PUNCTURE OR INCINERATE SPENT CONTAIN-ERS. LARGE NUMBERS OF AEROSOL CONTAINERS MAY REQUIRE HANDLING AS A HAZARDOUS WASTE, BUT IN MOST STATES TOTAL HAZARDOUS WASTE QUANTITIES LESS THAN 220 LBS PER MONTH MAY ALLOW DISPOSAL IN A CHEMICAL OR INDUSTRIAL WASTE LANDFILL. LOCAL, STATE AND FEDERAL AGENCIES FOR THE PROPER DISPOSAL METHOD IN YOUR AREA.

RCRA HAZ. WASTE NOS.: FOO2

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN WHEN HANDLING AND STORING:

DO NOT STORE AT TEMPERATURES ABOVE 120F. OR IN DIRECT SUNLIGHT. DO NOT

PUNCTURE OR INCINERATE CONTAINER.

CONTAINER MAY BURST IF HEATED ABOVE 120F.

DO NOT BREATHE SPRAY MISTS OR VAPORS.

KEEP OUT OF THE REACH OF CHILDREN.

SECTION X - TRANSPORTATION DATA

DOT PROPER SHIPPING NAME

CONSUMER COMMODITY

DOT MAZARD CLASS: N/A TT I.D. MUMBER : N/A

DOT LABEL/PLACARD: ORM-D

HA TSCA CHEMICAL INVENTORY - ALL INGREDIENTS ARE LISTED

EPA CWA 400FR PART 117 SUBSTANCE(RO IN A SINGLE CONTAINER): N/A

Appendix33-000880

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen—Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F,, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only—Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL: Flammable—At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic—The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion—A primary route of exposure through swallowing a liquid or solid (see below).

INH: Inhalation—A primary route of exposure through breathing of vapors (see below).

IRR: Irritant—Causes reversible effects in living tissues (e.g. Inflammation).

N/A: Not Applicable—Category is not appropriate for this product. N/D: Not Determined—Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer—Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value—A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic—The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEUTLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This timeweighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalizedsystemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.



### AND SAFE HANDLING AND DISPOSAL INFORMATION

05/01/91 PAGE 1 OF 3

10-20

5-10

ZEP MANUFACTURING COMPANY ST IN MAINTENANCE PRODUCTS ISSUE DATE: CARIBRET ZEP VETO

SUPERSEDES: 02/01/91 PRODUCT NUMBER: 1040

SECTION I - E H E R G E N C Y C D N T A C T S

ZEP MANUFACTURING COMPANY TELEPHONE: (404) 838-1880 BETWEEN 8:00 AM-5:00 PM (EST)

P.O. BOX 2015 NON-OFFICE HOURS, WEEKENDS, AND HOLIDAYS: AREA CODE 404

- 439-2973, 996-0899, 391-2982, 971-8267, 432-2873 ATLANTA, GEORGIA BOSO:

TRANSPORTATION EMERGENCY: OMEMTREC: TOLL FREE 1-800-424-9300 ALL CALLS RECORDED

DISTRICT OF COLUMBIA (202)483-7616 ALL CALLS RECORDED

TLV EFFECTS

M/D EIR

SECTION II - H A Z A R D O U S I N S R E D I E N T S

DESIGNATIONS (PPM) (SEE REVERSE) PROD. CXX HYDROCHLORIC ACID XX MURIATIC ACID: HYDROGEN 5 TOX COR CHLORIDE: MYDROCHLORIDE: CASA 7647-01-0: RTECS#

MW4025000: OSMA/ACEIH CEILING LIMIT-S PPM

CAR PHOSPHORIO ACID AR CASA 7664-18-E: RTEDS# O.25 TOX COR **₩0--**E0

TEARCOCCC: OSHA FEL-1 HE/HZ: OSHA/ACSTH STEL-

\*\* ALPHA DLEFIN EULFOWATE. SODIUM EALT \*\* EULFOWIC

ACIDS, C14-18 ALKANE AND C12-20 ALKENE AND C12-20-ALKENERYOROXY, BODIUM SALTS: CAS# &\$489-57-6; RTEOS#

MONE: DSHA PEL M/D

\*\* NONYLPHEMOXYPOLY(ETHYLEMEGXY)ETHANGL \*\* N/D EIR

POLY(OXY-1,2-ETHANEDIYL), ALPHA-(NONYLPHENYL)-OMEGA-"DROXY: DAS# 9016-45-9; RTEDS# MD0900000; DSHA PEL-

N/D

@ IDENTIFIES CHEMICALS LISTED UNDER SARA-SECTION 313 FOR RELEASE REPORTING.

SPECIAL MOTE: ADVERSE HEALTH EFFECTS VOULD NOT BE EXPECTED UNDER RECOMMEMDED CONDITIONS OF USE SO LONG AS PRESCRIBED SAFETY PRECAUTIONS ARE PRACTICED.

SECTION III - HEALTH HAZARD DATA

ACUTE EFFECTS OF OVEREXFORURE:

CORROSIVE TO SKIN AND EYES ON CONTACT. EYE CONTACT CAN PRODUCE CORNEAL DAMAGE OR BLINDNESS. SKIM CONTACT CAN PRODUCE INFLAMMATION, REDDENING, AND BLISTERING, IN-NLATION OF SPRAY MIST OR VAPORS MAY PRODUCE IRRITATION, BURNING, OR DESTRUCTION STISSUES IN THE RESPIRATORY TRACT, CHARACTERIZED BY COUGHING CHOKING, PAIN, OR SHORTNESS OF BREATH, SEVERE OVEREXPOSURE MAY LEAD TO FATAL LUNG DAMAGE. INGES-TIOM CAN CAUSE ASDOMINAL PAIN, NAUSEA, YOMITING, AND COLLAPSE, ALONG WITH TISSUE DESTRUCTION IN THE GASTROINTESTINAL TRACT.

INGREDIENTS IN THIS PRODUCT MAY AGGRAVATE EXISTING SKIN, EYE, OR RESPIRATORY

DISORDERS.

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.

his ble his

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen—Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL: Flammable—At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic—The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion—A primary route of exposure through swallowing a liquid or solid (see below).

INH: Inhalation-A primary route of exposure through breathing of vapors (see below).

IRR: Irritant—Causes reversible effects in living tissues (e.g. Inflammation).

N/A: Not Applicable—Category is not appropriate for this product.

N/D: Not Determined—Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer—Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value—A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic—The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time-weighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safety if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

### **DISCLAIMER**

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.



# MATERIAL SAFE

# AND SAFE HANDLING AND DISPOSAL INFORMATION

70 12010 ro  ${\mathbb Q}$ ы

O

12:

O

C = CΓij. .124 41 -9 part par TROCUCT -H THE SECTION

MANUFACTURING COMPANY
TIN MAINTENANCE PRODUCT

PRODUCTS

m C S S ;--1 **}-**--1 [7] 1: ----Т. 11.  $T^{*}$ 14. 1: 71  $\mathbb{C}^{1}$ Ç, 7 I was 11. 

CHRONIC EFFECTS OF OVERE
CHIAL IRRITATION AND FRE
CHRONIC EYE IRRITATION O
CHRONIC EYE IRRITATION O OPERENTACE OF THE CONTACT OF THE CON S OF BROWNIAN WAY CHURE NAME OF BROWNIAN MAY CHURE NAME OF BROWNIAN WAY CHURE WAS INFECTION. I <del>|-</del>! THE O 

20 177 ••• 10 Ü 핕

2,4

i,ii 1.3 7[] 酉 -1 ÄÖT m iri ---12 10 11-4 ----13 313 経験を 23 in the second İΠ q 四二 ЭВ ---10 Į.i'i 75 4-4

10 Ti 25 1-1 1-1 20 25 10 ---[ Ţ.

HAIL

177

FIT

ij

T ITi

PIT

Li,f

T! 1:-

1...1

31

[7]

Ė

1....

13 ITI

213

1,11

751

30

0

TI.

177

---

17

1"1

7

I, T

π.

I:-

14

93

i, Ti 1 T --: [7] 77 77 -ruj ſΠ 15 ii l ---1

TI

TEN ID PROCESS

INWESTATELY FLUSH

OASTONALLY FLUSH ET MEDICAL ATTENTION INMEDIATELY.

Y FLUSH CONTANINATED SKIN WITH ...

Y FLUSH EYES WITH PLENTY OF WATER !

TO PERSON TO FRESH GIR AT CNOS. IF

TOIAL RESPIRATION. GET MEDICAL ATT

RODUCT IS SWALLOWED. DO NOT INDUCE.

RODUCT IS SWALLOWED. DO DRINK. GET ET MEDICAL ATTENTION AT ON IF SEEATHING HAS STOPPED, TITENTION IMMEDIATELY.

E VONITING IF VICTIM IS STOPPED, ATTENTION AT ON INCOME. 

----

96 řΗ

iji Iri Ci • loof Jac-2 1 Ī 1,114 "13 m F."] 77 3.5 I,...3 15 []] ---1 1---71 111 33 .... 7: 144 1...1 39.

F-4 K COTHING

----

HEAR MEORREME, MITRICE, OR MATURAL RUS
NOTES WITH PROVEM RESISTANCE TO THE I
NET TIGHT-FITTING, SPLASH-PROOF SAFETY
ENSES SHOULD NOT BE WORN WHEN HANDLIN
F VENTILATION IS INADEQUATE, WEAR A P
NEMA OR OSHA-APPROVED RESPIRATOR.
P VAPORS ARE DETECTED, VENTILATE WORK
NEWIND WINDOWS AND USING EXHAUST FAMS THE INGREDIENTS LISTED SAFETY BOBGLES, CONTACT SAFETY BOBGLES, CONTACT SAFETAL.

301 [7] [4] [4] [7]

1---f [3][1

 $\mathbf{T}$ 

"13

71

YENT

I.

TION

!T!

~T3

33

m

(,)

---

1---1

1> 30 ΙĤ Τ. ijţ

1---Ç 1 1 Ti 1. en() U'E 1---E 173 Ţ.  $\mathbb{C}^{n}$ T---T:-

ING POINT (F)

HE PRESSURE(MMHG):

NE DENSITY(AIR=1): 2 b 5 0 0 0 Ö ΪŪ FiJ 9

[7] 

m --i [T] PHILEE DI PERCENT VOLATILE B
EVAPORATION RATE(W
FHIOSE DILUTION OF 15: 15: [1] [1] juli 1.1 Ç 

ijΆ

Ü

T 

T: -ij 111 T: 0 Õ 43 Tįη [2-3]; -1,\*\*\* <u> --- --</u> (A ŋ 1: 111 77 TŢ IJI

T

111 13 -4 1---1 Ę -11, 4--1 "17 33 [1] Τ. 32 Ü [1] 2.0 13 173 Ш 10-7 0  $i_{n}^{m}$ T: ·----

TIRE HANGED --

THE NAME OF THE WAR AND THE WAR SELF-CORTAIN 79 177 1,11 |---<u>!</u> ----ţ į---į .1 17 "f: 30 in 1 1 1,20 

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.

By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen—Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only-Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL; Flammable—At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic—The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion—A primary route of exposure through swallowing a liquid or solid (see below).

INH: Inhalation—A primary route of exposure through breathing of vapors (see below).

IRR: Irritant—Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable -- Category is not appropriate for this product.

N/D: Not Determined—Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer-Causes allergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value—A timp-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic—The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time-weighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.



### AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 3 OF 3

ZEP MANUFACTURING COMPANY
ST IN MAINTENANCE PRODUCTS

ISSUE DATE: 04/18/91 ZEP VETO

SUPERSEDES: 02/01/91 PRODUCT NUMBER: 1040

SECTION VII - REACTIVITY OATA

STABILITY : STABLE

INCOMPATIBILITY(AVOID) : STRONG ALKALIES AND OXIOIZING AGENTS

POLYMERIZATION : WILL NOT OCCUR.

HAZARDOUS DECOMPOSITION: MAY DECOMPOSE TO FORM TOXIC/CORROSIVE GASES

IF EXPOSED TO HIGH HEAT.

SECTION VIII - 5 P I L L A N D D I 5 P D 5 A L P R D C E D U R E S

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
OBSERVE SAFETY PRECAUTIONS IN SECTIONS 4 & 9 OURING CLEAN-UP. ABSORB SPILL ON
AN INERT ABSORBENT MATERIAL (EG ZEP-O-ZORB): PICK UP AND PLACE IN A CLEAN D.O.T.
SPECIFICATION CONTAINER FOR DISPOSAL. WASH AREA THOROUGHLY WITH A DETERGENT
SOLUTION AND THEN RINSE WELL WITH WATER.

### WASTE DISPOSAL METHOD:

LIQUIDS CANNOT BE SENT TO LANDFILLS UNLESS SCLIDIFIED. UNUSABLE PRODUCT AND SOME COLLECTED, SPENT USE-DILUTIONS MAY REQUIRE DISPOSAL AS A HAZARDOUS WASTE AT A PERMITTED TREATMENT/STORAGE/DISPOSAL FACILITY. IN MOST STATES HAZARDOUS WASTES IN TOTAL AMOUNTS OF ZEO LBS. OR LESS PER MONTH MAY BE DISPOSED OF IN A CHEMICAL OR INDUSTRIAL WASTE LANDFILL. IF COMPANY EFFLUENT IS ULTIMATELY TREATED BY A PUBLICLY OWNED TREATMENT WORKS. NEUTRALIZATION OF SPENT TANK-SOLUTIONS WITH SUBSEQUENT DISCHARGE TO THE SEVER MAY BE POSSIBLE. CONSULT LOCAL, STATE AND FED-AL AGENCIES FOR PROPER DISPOSAL METHOD IN YOUR AREA.

RORA HAY, WASTE MOS.: DOOR (SEE ABOVE)

SECTION IX - 5 F E C I A L P R E C A U T I O M S

PRECAUTIONS TO BE TAKEN WHEN HANDLING AND STORING:

STORE TISHTLY CLOSED CONTAINER IN A DRY AREA AT TEMPS. BETWEEN 40-120 DEGREES F. STORE AWAY FROM HIGHLY ALKALINE PRODUCTS AND OXIDIZING COMPOUNDS.

KEEP PRODUCT AWAY FROM SKIN AND EYES.

DO NOT BREATHE SPRAY MISTS OR VAPORS.

KEEP OUT OF THE REACH OF CHILDREN.

SECTION X - TRANSPORTATION DATA

DOT PROPER SHIPPING NAME

COMPOUND, CLEANING, LIQUID

DOT HAZARD CLASS: CORROSIVE MATERIAL

TI.D. NUMBER: NA1760 DOT LABEL/FLACARO: CORROSIVE

EPA OWA 40CFR PART 117 BUSBTANCE(RE IN A SINGLE CONTAINER): PHOSPHORIC ACID.

5000#; HYDROCHLORIC ACID 5000#.

Zep Manufacturing Company is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. This information is intended to aid you in devising safe procedures for using our products and to assist you in complying with applicable regulations for disposal of wastes. We request that you take the time to discard any previous Material Safety Data Sheets for this product so that your files remain up-to-date.



By way of explanation, we have identified in Section II of this form those components which contribute some hazard to our product. The hazard designations correspond to those required under OSHA's Hazard Communication Standard (29 CFR 1910.1200) and may be interpreted as follows:

### ABBREVIATIONS USED IN THE MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists.

CAR: Carcinogen—Considered a potential or confirmed cancer causing agent by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

CBL: Combustible—At temperatures between 100°F, and 200°F, chemical gives off enough vapor to ignite if a source of ignition is present.

CNS: Central Nervous System Depressant.

COR: Corrosive Causes irreversible alterations in living tissue (e.g. burns).

EIR: Eye Irritant Only—Causes reversible reddening and/or inflammation of eye tissues.

Est'd: Estimated.

FBL: Flammable—At temperatures under 100°F., chemical gives off enough vapor to ignite if a source of ignition is present.

HTX: Highly Toxic—The probable lethal dose for a 70 kg (150 lb.) man is one teaspoonful or more.

ING: Ingestion—A primary route of exposure through swallowing a liquid or solid (see below).

INH: Inhalation—A primary route of exposure through breathing of vapors (see below).

IRR: Irritant—Causes reversible effects in living tissues (e.g. inflammation).

N/A: Not Applicable—Category is not appropriate for this product.

N/D: Not Determined—Insufficient information for a determination for this item.

NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit—The time-weighted-average exposure value established by OSHA for repeated exposure during any 8 hours per day, 5 days per week, without adverse effects.

SEN: Sensitizer—Causes altergic reaction after repeated exposure.

SKIN: A primary route of exposure through contact with the skin (see below).

TLV: Threshold Limit Value—A time-weighted-average exposure value established by the ACGIH for the work period described under PEL, above.

TOX: Toxic—The probable lethal dose for a 70 kg man is one ounce or more.

The health and physical data contained in various sections of this form concern the overall hazards of the product. Please note that the EST'D PEL/TLV shown in Section III pertains to airborne concentrations of vapors from the product as a whole. This time-weighted-average is arrived at by using a formula developed by the ACGIH for only those products where the hazardous ingredients have similar toxicological properties. The estimated value should serve only as a guide for providing workplace conditions under which we believe that nearly all workers may be repeatedly exposed 8 hours per day, 5 days per week, without adverse effects. This does not pertain to sensitive individuals or to anyone with an existing medical condition or who may be pregnant; anyone with such a condition should consult a physician prior to use of this product. The HMIS CODES refer to the Hazardous Materials Information System developed by the National Paints and Coatings Association, and is provided, strictly, for those customers that train their employees in its use. We do not endorse or suggest the use of this hazard coding system, since, in our view, it does not adequately present the hazards associated with a more general chemical product line. Primary Route of Entry—this item indicates the way or ways one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with government regulations. "Empty" containers should never be reused unless reconditioned.

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Company is concerned for your health and safety. All Zep products can be used safely if used with proper protective equipment and according to proper handling practices consistent with label instructions and the Material Safety Data Sheet. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet. Consult your supervisor, or Zep Manufacturing Company, if you have any questions.

### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings and advisories in the product's label and Material Safety Data Sheet.



A11

06551 00

### North American Refractories Co.

A Member of The Didier Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-18(N -216/621-5200

### NORTH AMERICAN REFRACTORIES PRODUCT SAFETY DATA SHEET

MANUFACTURER

MSDS # 3041-00

NORTH AMERICAN REFRACTORIES

Vendor:

Emergency Phone Number East (814) 236-3890 (415) 432-4741 Canada (416) 765-4404

MSDS prepared by: NORTH AMERICAN REFRACTORIES Technical Center (814) 234-7981

Date Issued: 04/14/91

Date Revised: 05/22/86

Product Type: Refractory Castable / Gun Material

Trade Name: LITECRETE 70

\*\*\*\*\*\* SECTION I - PRODUCT IDENTIFICATION

Chemical Name: Alumina Silica Insulating Castable

A1203 , \$102 , Ca0 Chemical Family:

\*\*\*\*\*\*\* SECTION II - CHEMICAL COMPOSITION \*\*\*\*\*\*\*\*\*

Hazardous Ingredients: CAS Number: PCT:

Crystalline Silica including: N/A 15% less than

Quartz 14808-60-7 14464-46-1 Cristobalite Tridymite 15468-32-3

Other Ingredients: CAS Number: PCT:

Alumina Silicate 1302-93-8 less than 50% Hydrous Alumina Silicate 1302-87-0 less than 10% Hydraulic Setting Cement 12042-68-1 less than 40% Silica 14808-60-7 less than 202

SECTION III - PHYSICAL DATA \*\*\*\*\*\*\*\*\*\*\*\*

Appearance and Odon: Tan, granular, dry mixture, odorless,

\*\*\*\*\*\*\*\*\*\*\*\* SECTION IV - FIRE AND EXPLOSION HAZARD \*\*\*\*\*\*\*\*\*

Flammability: This product is non-flammable and will not support combustion.

MSDS # 3041-00 cont.

page 2

### North American Refractories Co.

A Member of The Didier Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 286/621-5200

\*\*\*\*\*\*

SECTION V - HEALTH HAZARD

\*\*\*\*\*\*\*\*

Threshold Limit Value: For respirable dust containing crystalline silica:

OSHA :

ACGIH: Quartz.....0.1mg/m3

Cristobalite....0.05mg/m3

Tridymite.....0,05mg/m3

Effects of Overexposure:

### CEMENT:

Cement may cause irritation to skin and eyes. Low toxicity via inhalation route. Pulmonary fibrosis due to cement dust occurs rarely if at all. Cement may be an allergen in some people. Note: LD50 and LC50 is not available for "Cement"

### CRYSTALLINE SILICA:

Chronic overexposure to dust containing respirable sized crystalline silica (quartz, cristobalite, and tridymite) can cause delayed lung injury (silicosis).

Points of attack: Respiratory system and lungs.

Route of entry: Inhalation. Inhalation of dust containing crystalline silica may contribute to pre-existing pulmonary diseases such as asthma and lung disorders associated with the smoking of tobacco.

Some recent animal studies have caused the International Agency for Research on Cancer (IARC) to categorize crystalline silica as a 2A carcinogen. A 2A carcinogen is one which:

- there is sufficient evidence for the carcinogenicity to experimental animals.
- (2) there is limited evidence of the carcinogenicity to humans.

Toxicity data:

Quartz: LCLo: 300ug/m3 / 10Y-I

inhalation human

Cristobalite: TCLo: 16 mppcf/8H/17.9Y-I

inhalation human

Tridymite: TCLo: 16 mppcf/8H/17.9Y=I

inhalation human

Note: LD50 and LC50 not available.

For more information on crystalline silica refer to:

(1) IARC Monograph, Volume 42

(2) NIOSH Document No. 75-120

With the exception of:

Crystalline milica

No ingredient in this product is found on either the Federal OSHA, NTP, or IARC list of



MSDS # 3041-00 cont.

page 3

### North American Refractories Co.

A Member of The Didier Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 216/621-5200

carcinogens.

Emergency and First Aid Data:

Skin: Wash thoroughly with soap and water.

Inhalation: Remove to fresh air.

Eves: Flush with water for 15 minutes and get

medical help.

\*\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION VI - REACTIVITY DATA

\*\*\*\*\*\*\*\*\*

Stability and Reactivity: This product is stable and non-reactive.

Hazardous Decomposition: Crystalline silica levels in used refractories may be higher or lower than as-shipped depending on service conditions. Hygiene monitoring must be done to insure the proper employee protection during tearout.

\*\*\*\*\*\*\*\* SECTION VII - SPILL AND LEAK PROCEDURES \*\*\*\*\*\*\*\*\*\*\*\*

Steps to be Taken in Case of a Spill:

Avoid generating dust exposure during cleanup.

Waste Disposal Method: Dispose of material according to local, state or federal regulations and as final used condition of the product dictates.

\*\*\*\*\*\*\*\*\*\*\*\*\* SECTION VIII - INDUSTRIAL HYGIENE INFORMATION \*\*\*\*\*

Ventilation: Local exhaust recommended to maintain exposures

below TLV.

Respiratory Protection: NIOSH approved dust type for exposures above TLV.

Protective Gloves: Impervious gloves recommended.

Eye Protection: Recommended.

\*\*\*\*\*\*\*\*\*\* \*\*\*\* SECTION IX - SPECIAL PRECAUTIONS \*\*\*\*\*\*\*\*

Special Precautions: Avoid dust generation.

Precautionary Labeling: Product contains crystalline silica and

hydraulic setting cement.

WARNING: Prolonged inhalation of product

dust may cause delayed lung injury (silicosis). Contact may cause irritation to eyes and skin.

THRESHOLD LIMIT VALUE: NOT ESTABLISHED FOR MIXTURE, SEE SECTION II.

MATERIAL SAFETY DATA SHEET: TRUST-X II DEP CENTER WHL PAGE: 3
(CONTINUED) - SECTION V - HEALTH HAZARD DATA
EFFECTS OF OVEREXPOSURE :
COUGHING AND SHORTNESS OF BEACUTE - (SHORT TERM EXPOSURE)  MAY EXPERIENCE SKIN IRRITATION OUE TO DIST. MAY IRRITATE EYES.
MAY EXPERIENCE SKIN IRRITATION DUE TO DUST. DUST MAY IRRITATE EYES.
- CHRONIC - (LONG TERM EXPOSURE)
- CHRONIC - (LONG TERM EXPOSURE) INHALATION OF DUST MAY AFFEST BREATHING CAPACITY, GRINDING MAY CREATE ELEVATED SOUND LEVELS WHICH MAY AFFECT HEARING, AND MAY AGGRAVATE PRE- EXISTING RESPIRATORY CONDITIONS. THERE IS LIMITED INFORMATION THAT CHRYSTALLINE SILICA IS A CARCINGGEN.
THÈRE IS LIMITED INFORMATION THAT CHRYSTALLINE SILICA IS A CARCINDGEN.
PRIMARY ROUTE OF ENTRY: X< INHALATION < INGESTION < ABSORPTION
EMERGENCY & FIRST AID PROCEDURES Inhalation : Remove to fresh air, apply artificial respiration as needed. Obtain medical
ASSISTANCE.
EYE CONTACT: Wash with large amounts of water. Obtain first aid and medical assistance
IF NEEDED.
SKIN CONTACT: WASH AFFECTED AREA WITH SDAP AND WATER. OBTAIN MEDICAL ASSISTANCE.
INGESTION : DBTAIN MEDICAL ASSISTANCE.
NOTES TO PHYSICIAN :
SECTION VI - TOXICITY INFORMATION
PRODUCT CONTAINS CHEMICAL LISTED AS CARCINOGEN OR POTENTIAL CARCINOGEN BY:
IARC <yes <yes="" acgih="" dther="" ntp="" osha="" other="" td="" x<no="" x<no<=""></yes>
·
MATERIAL SAFETY DATA SHEET: TRUST-X II DEP CENTER WHL PAGE: 4
(CONTINUED) - SECTION VI - TOXICITY INFORMATION
THERE IS LIMITED INFORMATION THAT CHRYSTALLINE SILICA IS A CARCINOGEN.
SECTION VII - REACTIVITY DATA
X <stable <unstable="" avoid<="" conditions="" td="" to=""  =""></stable>
STABILITY ;
INCOMPATABILITY (MATERIALS TO AVOID) :
NONE
HAZARDOUS DECOMPOSITION PRODUCTS
T WILL NOT MAY 1 CONDITIONS TO AVOID
WILL NOT MAY CONDITIONS TO AVOID HAZARDOUS X <dccur <dccur<="" td=""></dccur>
HAZARDOUS X <occur <dccur="" avoid<="" conditions="" td="" to=""></occur>
HAZARDOUS X <cccur -="" avoid="" be="" cdccur="" conditions="" if="" is="" leak="" material="" or="" procedures="" released="" section="" spill="" spilled:<="" steps="" taken="" td="" to="" viii=""></cccur>
HAZARDOUS POLYMERIZATION   SECTION VIII - SPILL OR LEAK PROCEDURES  STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: USE NORMAL CLEANUP PROCEDURES.
HAZARDOUS POLYMERIZATION   SECTION VIII - SPILL OR LEAK PROCEDURES  STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: USE NORMAL CLEANUP PROCEDURES.
HAZARDOUS POLYMERIZATION  SECTION VIII - SPILL OR LEAK PROCEDURES  STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: USE NORMAL CLEANUP PROCEDURES.  WASTE DISPOSAL METHOD(S): SANITARY LANDFILL METHODS CONSISTENT WITH FEDERAL STATE AND LOCAL REGULATIONS. PRODUCTS WITH LISTED FLUORIDES MAY HAVE SLIGHTLY SOLUBLE FLUORIDE SWARF.
HAZARDOUS POLYMERIZATION   SECTION VIII - SPILL OR LEAK PROCEDURES  STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: USE NORMAL CLEANUP PROCEDURES.  WASTE DISPOSAL METHOD(S): SANITARY LANDFILL METHODS CONSISTENT WITH FEDERAL STATE AND LOCAL REGULATIONS. PRODUCTS WITH LISTED FLUORIDES MAY HAVE SLIGHTLY SOLUBLE FLUORIDE SWARF.  NEUTRALIZING AGENT:
HAZARDOUS POLYMERIZATION  SECTION VIII - SPILL OR LEAK PROCEDURES  STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: USE NORMAL CLEANUP PROCEDURES.  WASTE DISPOSAL METHOD(S): SANITARY LANDFILL METHODS CONSISTENT WITH FEDERAL STATE AND LOCAL REGULATIONS. PRODUCTS WITH LISTED FLUORIDES MAY HAVE SLIGHTLY SOLUBLE FLUORIDE SWARF.

MATERIAL SAFETY DATA SHEET: TRUST-X II DEP CENTER WHL SECTION IX - SPECIAL PROTECTION INFORMATION REQUIRED VENTILATION : LOCAL AND MECHANICAL VENTILATION ARE RECOMMENDED. RESPIRATORY PROTECTION: USE NIOSH-APPROVED RESPIRATOR IF DUST EXPOSURE EXCEEDS TLV. EYE PROTECTION : SAFETY GLASSES OR GOGGLES OTHER PROTECTION : HEARING PROTECTION IS RECOMMENDED. SECTION X - STORAGE AND HANDLING INFORMATION STORAGE TEMPERATURE INDOOR HEATED REFRIGERATED OUTDOOR MAX: N/A MIN: N/A PRECAUTIONS TO BE TAKEN IN HANDLING & STORING SEE ANSI STANDARD B7.1 OTHER PRECAUTIONS HANDLE ONLY WITH ADEQUATE VENTILATION SECTION XI - REGULATORY INFORMATION C.A.S NUMBER UPPER % LIMIT CHEMICAL NAME SILICON DIOXIDE 14808-60-7 1 MATERIAL SAFETY DATA SHEET: TRUST-X II DEP CENTER WHL (CONTINUED) - SECTION XI - REGULATORY INFORMATION THOSE INGREDIENTS LISTED ABOVE ARE SUBJECT TO THE REPORTING REQUIRMENTS OF 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372.

IF USE EXEMPTION) APPEARS UNDER UPPER % LIMIT, END USERS ARE EXEMPT FROM NOTIFICATION BECAUSE THE PRODUCT IS USED AND LABELED FOR ROUTINE UANITORIAL WORK, OR THE PRODUCT IS USED AND LABELED FOR FACILITY GROUNDS MAINTENANCE (SUCH AS FERTILIZERS AND HERBICIDES), OR THE PRODUCT IS USED AND LABELED FOR MAINTAINING MOTOR VEHICLES. CALIFORNIA PROPOSITION 65 WARNING: THIS PRODUCT CONTAINS THE FOLLOWING CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE (1) CANCER OR (2) BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM: SECTION XII - TRANSPORTATION \* (FOR FUTURE USE) LIMITED OTY UNIT CONTAINER DOT SPS CONTAINER NET EXPLOSIVE WT. AEROSOL PROPELLANT(S) SECTION XIII - REFERENCES

1. "THRESHOLD LIMIT VALUES AND BIOLOGICAL EXPOSURE LIMITS FOR 1989-1990",
- AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS.
2. "AIR CONTAMINANTS - PERMISSIBLE LIMITS" CFR 29 (1910.1000), U.S.DEPARTMENT OF LABOR, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION. \* SHORT TERM EXPOSURE LIMIT (TWA) LISTED AS FINAL RULE LIMITS PUBLISHED IN THE FEDERAL REGISTER/VOL. 54 NO. 12, 1-19-89 THE INFORMATION CONTAINED HERIN IS BASED ON DATA CONSIDERED ACCURATE IN

MATERIAL SAFETY DATA SHEET: TRUST-X II DEP CENTER WHL PAGE: 7

(CONTINUED) - SECTION XIII - REFERENCES

LIGHT OF CURRENT FORMULATION. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THIS DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

X-ERGON, A PARTSMASTER CO. DIV OF NCH ASSUMES NO RESPONSIBILTY FOR PERSONAL INJURY OR PROPERTY DAMAGE CAUSED BY THE USE STORAGE ON THE PRODUCT IN A MANNER NOT RECOMMENDED ON THE PRODUCT LABEL. USERS ASSUME ALL RISKS ASSOCIATED WITH SUCH UNRECOMMENDED USE, STORAGE, OR DISPOSAL OF THE PRODUCT.

### <u>SECTION I - PRODUCT IDENTIFICATION</u>

Manufacturer: Aresco Products, Inc.

Emergency Phone:

Information Phone: 914 762 0685

23 Snowden Ave.

914 762 0685 914 941 5177

Ossining, NY 10562

914 941 6609

IDENTITY: Pyro-Putty 657 Activer

04/25/91

### SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Compounds	CAS #	ACGIH TLV	Weight ≯
Chromium	7440-47-3	0.5 mg/m3	(15
Iron	1309-37-1	_5.0 mg/m3	⟨4∅
Nickel	7440-01-0	1.0 mg/m3	⟨1@
Manganese	7439-96-5	5.0 mg/m3	₹5 -
Molybdenum -	7439-98-7	10.0 mg/m3	(5
Polyamide Resin	2 <b>50</b> 68-38-6	N/D	(50

The above powders are suspended in an organic binder system, therefore no free dust exists.

### SECTION III - PHYSICAL DATA

Bailing Point: N/D

Specific Gravity: paste

Vapor Density (air=1): N/D

Melting Point: N/D

Vapor Pressure (mm Hg.): N/D

Evaporation Rate: N/D

(Butyl Acetate=1)

Solubility in Water: @

 $V.O.C. = \langle 1 \text{ qms/ltr.} \rangle$ 

Appearance and Odor: Dark gray paste.

### SECTION IV - FIRE and EXPLOSION HAZARD DATA

Flash Point: 509F (closed cup) Flasmable Limits: LEL: (N/D) UEL:(N/D)

Extinguishing Media: Carbon dioxide, foam, dry chemical.

Special Fire Fighting Procedures: Use self contained air supplied breathing apparatus. Class B liquid.

Unusual Fire and Explosion Hazards: None known, handle as a combustible.

### SECTION V - REACTIVITY DATA

Stability ( ) Unstable ( X ) Stable Conditions to avoid: Incompatible with strong oxidizing agents. Hazardous decomposition or by-products: carbon dioxide and or carbon monoxide, nitrogen oxides.

Hazardous Polymerization ( ) May Occur ( X ) Will Not Occur

### SECTION VI - HEALTH HAZARD DATA

Effects of Overexposure

Primary routes of entry: Inhalation, skin, ingestion.

Health hazards (acute and chronic): ANSI classification 3

Overexposure effects: Irritation, sensitization, dermatitis; allergies may be aggravated by exposure.

### Esergency and First-Aid Procedures

Eye: Issediately flush with water for at least 15 sinutes.

Skin: Wipe off excess. Rinse skin with 5% acetic acid, scrub with soap and water.

Ingestion: Not a likely hazard, call a physician.

Inhalation: Remove to fresh air, give oxygen if breathing is difficult.

### SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be taken in case material is released or spilled: Avoid personal contact. Recover uncontaminated material for use. Scrub with 5% acetic acid. Rinse with very hot water. Flush contaminated area with water.

Waste Disposal Method: Dispose of in accordance with local, state, and federal regulations.

Precautions to be taken in handling and storing: Do NOT leave containers open, causes irritation. May cause allergic skin reaction. Avoid contact; avoid breathing vapor, sist, spray; wash after handling. Use of impervious gloves, goggles, and an NIOSH approved respirator for organic vapors is recommended:

### SECTION VIII SPECIAL PROTECTION INFORMATION

Good industrial hygiene practice requires that employee exposure be maintained below the recommended TLV. This is preferably achieved through the provision of adequate ventilation where necessary. Where dust cannot be controlled in this way, personal respiratory protection should be employed.

DISCLAIMER OF LIABILITY: THE INFORMATION CONTAINED HERE IN IS BASED ON DATA TAKEN FROM SOURCES BELIEVED TO BE BOTH CURRENT AND RELIABLE AT THE TIME OF PUBLICATION. AREMOO PRODUCTS, INC MAKES NO WARRANTIES EXPRESSED OR IMPLIED, AS TO THE ACCURACY AND ASSUMES NO LIABILITY ARISING FROM ITS USE BY OTHERS. COMPLIANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS REMAINS THE RESPONSIBILITY OF THE USERS.

### SECTION I - PRODUCT IDENTIFICATION

Manufacturer: Areaco Products, Inc.

23 Snowden Ave.

Emergency Phone: 914 762 0685

Information Phone: 914 762 0685

Ossining, NY 10562

914 941 5177

914 941 6609

IDENTITY: Pyro-Putty 657 Base

04/25/91

### SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Compounds	CAS #	ACGIH TLV	Weight %
Chronium	7 <del>440-</del> 47-3	0.5 mg/m3	(15
Iron	1 <b>309-</b> 37-1	5.0 mg/m3	(40
Nickel	744 <b>0-0</b> 2 <b>-0</b>	1.0 mg/m3	(16
Manganese	7439 <del>-96-</del> 5	5.0 mg/m3	(5
Molybdenum	7 <b>439-98-</b> 7	10.0 mg/m3	<b>(5</b>
Polyamide Resin	2 <b>50</b> 68-38-6	N/D -	<b>(58</b>

\*Note: The above powders are suspended in an organic binder system, therefore no free dust exists.

Bisphenol A diglycidyl ether resin (epoxy resin) - OSHA PEL and ACGIH TLV not established.

### SECTION III - PHYSICAL DATA

Boiling Point: >500F

Specific Gravity: paste

Vapor Density (AIR=1): N/D

Melting Point: N/D

Vapor Pressure (mm Hg.): N/D

Evaporation Rate: (1 (Butyl Acetate=1)

Solubility in Water: 0

 $V.O.C. = \langle 1 \text{ gas/ltr.} \rangle$ 

Appearance and Odor: Dark gray paste.

### SECTION IV - FIRE and EXPLOSION HAZARD DATA

Flash Point: 390F (closed cup)

Flammable Limits: LEL: (N/D) UEL:(N/D)

Extinguishing Media: Carbon dioxide, foam, dry chemical, water spray.

Special Fire Fighting Procedures: Use self contained air supplied breathing apparatus.

Unusual Fire and Explosion Hazards: Decomposition and combustion products may be toxic.

### SECTION V - REACTIVITY DATA

Stability ( ) Unstable ( X ) Stable Conditions to avoid: Strong acids or bases in bulk.

Hazardous Polymerization ( ) May Occur ( X ) Will Not Occur

### SECTION VI - HEALTH HAZARD DATA

Effects of Overexposure

Primary routes of entry: Inhalation, skin, ingestion.

Health hazards (acute and chronic): ANSI classification 4

Overexposure effects: Irritation, sensitization, dermatitis.

### Emergency and First-Aid Procedures

Eye: Immediately flush with water for at least 15 minutes.

Skin: Promptly wash thoroughly with water at least 15 minutes.

Ingestion: Not a likely hazard, call a physician.

Inhalation: Resove to fresh air, give oxygen if breathing is difficult.

### SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be taken in case material is released or spilled: Avoid personal contact. Recover uncontaminated material for use. Take up residue with absorbent. Put in closable container for disposal. Flush contaminated area with water.

Haste Disposal Method: Dispose of in accordance with local, state, and federal regulations.

Precautions to be taken in handling and storing: Do NOT leave containers open, causes irritation. May cause allergic skin reaction. Avoid contact; avoid breathing vapor, mist, spray; wash after handling. Use of impervious gloves, goggles, and an NIOSH approved respirator is recommended.

### SECTION VIII SPECIAL PROTECTION INFORMATION

Good industrial hygiene practice requires that employee exposure be maintained below the recommended TLV. This is preferably achieved through the provision of adequate ventilation where necessary. Where dust cannot be controlled in this way, personal respiratory protection should be employed.

DISCLAIMER OF LIABILITY: THE INFORMATION CONTAINED HERE IN IS BASED ON DATA TAKEN FROM SOURCES BELIEVED TO BE BOTH CURRENT AND RELIABLE AT THE TIME OF PUBLICATION. AREMOO PRODUCTS, INC MAKES NO WARRANTIES EXPRESSED OR IMPLIED, AS TO THE ACCURACY AND ASSUMES NO LIABILITY ARISING FROM ITS USE BY OTHERS. COMPLIANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS REMAINS THE RESPONSIBILITY OF THE USERS.

# Material Safety Data Sheet May be used to comply with OSHA's Hazard Communication Standard. 29 CFR 1910.1200. Standard must be separated for specific requirements.

Unusual Fire and Explosion Harrards

Unknown

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072



consulted for specific requirements. OMB No. 1218-0072 Note: Blank spaces are not permitted. If any item is not applicable, or no IDENTITY (As Used on Label and List) information is available, the space must be marked to indicate that. .SSS DEODORANT BLOCKS (PARA ALL) Section I **Emergency Telephone Number** Manufactured for: 800-228-5635 Telephone Number for Information 617-273-2020 TRIPLE S Data Prepared April 25, 1991 141 Middlesex Turnpike Signature of Preparer (optional) Burlington, MA 01802 Section II — Hazardous Ingredients/Identity Information Other Limits OSHA PEL ACGIH TLV Recommended % lootona Hazardous Components (Specific Chemical Identity; Common Name(s)) CAS# 75 ppm 75 ppm 99.75% PARADICHLOROBENZENE 106-46-7 110 ppm (ACGIH-STEL) UN# 1592 CAS numbers are not available for fragrances since they are proprietary mixtures from The name of the firm supplying a specific fragrance is suppliers available on request. HMIS NUMBER: **HEALTH 2** FIRE 2 REACTIVITY O Section III — Physical/Chemical Characteristics Seiting Point Specific Gravity (H2O = 1) 174° C 345.2° F 1.245 -11.250 Vapor Pressure (mm Hg.) Melting Point 127°F 0.6 Vapor Density (AIR = 1) Evaporation Rate 5.1 (Butyl Acetate = 1) iunknown. Sciubility in Water .005 Appearance and Door White block or crystals "mothball" cdor Section IV - Fire and Explosion Hazard Data Fissh Point (Method Usea) Fiammable Limits UEL 150°F tag closed cup 2.5 unknown Estinguishing Media Water spray - feam - CO<sub>o</sub> - dry chemical Sound file Figures Productives Wear protective clothing and NIOSH/NHSA approved self-contained breathing apparatus where exposure to vapors is possible.

Section V — Stability	Reactivity Dat Unstable	<u></u>	Conditions to Avoid
	Stable	ХХ	Keep away from open flame
Locaroon Libibly /	Materials to Avoid		l l l l l l l l l l l l l l l l l l l
		UXIO	izing agents, hot aluminum and aluminum alloys
Hezardous Desor Carbot		carbo	n dioxide. smokes. soot. hydrogen chloride & phosgene
Hazardous Polymerization	May Occur		Conditions to Avoid None
	Will Not Occur	XX	
Section VI —	- Health Hazar	d Data	
Route(s) of Entry	: Int	nalation?	Yes Yes Ingestion? unlikely
Health Hazarcs Innalatio	(Acute and Chronic) n Or ingesti	on of	paradichlorobenzene at concentrations well above permissible
exposure	limits can c	ause (	depression of the common nervous system, vapor may cause
irritatio	n of skin or	` eyes	and has been known to cause liver damage in rats and rabbits
Carcinogenicity: on limited e indicated pa	EPA has placed evidence of car ira to be witho	paradi cinogen ut carc	chiorobenzene in its Group C carcinogen category: possible human carcinogen ba nicity in animals and in the absence of human data. Inhalation studies have ninogenic effects.
Signs and Symp of drunke concentra	noms of Exposure ness & cardi tion of para	leadac iac se is w	hes dizziness, eyes, nose & throat irritation, nausea, feeling insitization may be experienced by some individuals where the rell above the TLV in confined, poorly ventilated areas
Medical Condition	ons valed by Exposure	Unk	nown
mouth. Do n	ot induce vani	ting. G	es: flush with plenty of water for at least 15 minutes. Skin:— lap & water. Inhaled: remove to fresh air. If swallowed: rinse live lots of water or milk. In all cases where pain in an affected area persiste Handling and Use  Call a physician.
Steps to Se Tai	xen in Casa Materia	ai Is Rete	
			essed or Spilled Scoop up and put in closed container. Keep material
out of se	wers or oper	n wate	rways. Allow small amounts to evaporate naturally.
Waste Disposal	Method The r	materi	al should be burned in an approved incinerator or disposed of
<u>in an app</u>	roved waste	dump	in accordance with applicable Federal State & Local regulation
Precaetions to	Se Taxen in Hansi	ing and S	Storie away from heat and open flames in tichtly closed
container	s. Avoid ex	kcessi	ve inhalation and contact with skin and eves.
Other Precautio	205		ontact lenses when handling
	<del></del>	<del>-</del>	
Section VIII	— Control Me	asures	
Resolution Pro	zecupη (Spyzty Typ Ne limits ma	oə) By be	exceeded, use NIOSH approved respirator
Ventilation	Local Exhaust Use In We	il vən	tilated areas   Special N/A
	Meananical (Ger		Other N/A
Protective Glav	es None		Eye Protection Do not rub eyes with contaminated hand
Other Protects	e Clathing or Equip	oment N	lone
	Practices		
FARADICHLU	<u>OUGNIY WITH</u> DROBENZENE I	<u>soab</u> S SUB.	and water after coming in contact with product DECT TO THE REPORTING REGULEREMENTS OF SECTION 212 OF THE

NATIONAL SANITARY SUPPLY CO. 13217 S. Figueroa Street Los Angetes, California 90061 Manufacturer: SANI-FRESH INTERNATIONA INC. 4702 Goldfield Drive San Antonio, Texas 78213 Emergency Tel. No. 512/5 61-5374

MATERIAL SAFETY DATA SHEET

MATERIAL SAFET		
SECTION 1. ID	ENTIFICATION OF PRODUCT*	
Product Name:	FXTRA CARE BARRIER CREAM	Date Issued: 05/08/91
Product Code:	# 91265 ARDOUS INGREDIENTS/IDENTITY	Mattonate Items III
SECTION 2. HAZ	ARDOUS INGREDIENTS/IDENTITY	a man a man a man an
INGREDIENTS	OSHA PEL ACGIH TLV EXPOSURE LIMITS 15*mg/m3 10*mg/m3 NE	* CWS # * * * *
GEYCERIN *(as nuisance	15*mg/m3 10*mg/m3 NE	2-10 55-81-5
WHITE MINERAL	5*mg/m3 5*mg/m3 NE	2-10 806 2-47-5
PETROLATUM SIEARIC ACID LANGLIN TRIETH ANOLAMIN NON-HAZARDOUS INGREDIENTS	mist)     5*mg/m3    5*mg/m3    NE     ist)     NE         NE         NE     NE	2-10 803 9-03-8 2-10 57-11-4 1-5 803 1-44-5 < 5 102-71-6 BAL- NA
** UNI DENT IF IE	D INGREDIENTS ARE NOT CONSIDERED RD COMMUNICATION STANDARD (29 CF	HAZARDOUS UN) ER THE R-1910-1200).
SECTION 3. PH	YSICAL & CHEMICAL CHARACTERISTIC	
Boiling Point Vapor Pressure	NE Specific (mm Hg.): NE Percent V	Gravity(H20=1)0.910 T) 0.920 olatile (By Volume %2:( Minus
Solubility in Evaporation Ra Appearance and	Water: NEGLIGIBLE Melting P te: NA PH: 7.0 Odor: WHITE VISCOUS CREAM WITH	oint: N/E to 8.0 PLFASANT ODOR
Section 4. FI	RE AND EXPLOSION HAZARD DATA	
Flash Point (M Flammable Limi	ethod Used ): N/A ts in Air % By Volume : LEL= N/	A UEL=V/A
Auto-Ignition Extinguishing	Temperature: N/A Media: USE MEDIA SUITABLE FOR SU	RROUNDING MATERIALS
Special Fire F	ighting Procedures: NO SPECIAL P	ROCEDURES REQUIRED
Unusual Fire &	Explosion Hazards: NONE KNOWN	
SECTION 5. RE	ACTIVITY DATA	
Stability: NOR	MALLY STABLE Conditions to	Avoid: NONE ( NOWN
Incapability -	Naterials to Avoid: NONE KNOWN	
Hazardous Poly	merization: DOES NOT OCCUR	
Decomposition	Product: NONE KNOWN	
	CTAL PRECAUTIONS AND SPILL, LEAK	PROCEDURES
	be taken in handling and storag (5 C) AND 90 F (32 C).	
Steps to be ta	ken in case material is released	or spilled: ILEAN UP WITH
Waste Disposal	Mathada /Camault Endanal. State	& Local Regulations): ATER, IF PERMITTED BY LOCAL,

-NATIONAL SANITARY SUPPLY CO. 13217 S. Figueroa Street Los Angeles, California 90061

MATERIAL SAFETY DATA SHEET

Manufacturer: SANI-FRESH INTERNATIONAL INC. 4702 Goldfield Drive San Antonio, Texas 78218 Emergency Tel. No. 512/661-5374

SECTION 1. IDENTIFICATION OF PRODUCT\* Date Issued: 11/21/91 Supercedes: 06/27/89 Product Name: HEAVY-DUTY SANI-TUFF CLEANSER National Item#: 1072XX ACGIH TLV **EXPOSURE** SECTION 2. HAZARDOUS INGREDIENTS CAS # DSHA PEL LIMITS SODIUM LAURETH SULFATE SODIUM C14-16 OLEFIN SULFONATE SODIUM CHLORIDE MIPA-DODECYLBENZENSULFONATE 9004-82-4 NE NE NE 15-25 NE NE NE NE 68439-57-6 7647-14-5 42504-46-1 NE 5 Non-Hazardous Ingredients\*
\*UNIDENTIFIED INGREDIENTS ARE NOT CONSIDERED HAZARDOUS UNDER THE FEDERAL HAZARD COMMUNICATION STANDARD (29 CFR-1910-1200). PHYSICAL & CHEMICAL CHARACTERISTICS SECTION 3. Boiling Point (F): <212F
'apor Pressure (mm Hg.): < 18
'apor Density (Air=1): <1
Solubility in Water: COMPLETE Specific Gravity(H\_0=1):1.015 TO 1.025 PH 5.0 to 6.0 Reactivity In Water: NONE Melting Point: N.E. Evaporation Rate (BuAc=1): < 1
By Volume (%) (Minus Water): < 20
Appearance and Odor: RED CLEAR GEL % Volume (%) (Minus Water): Section 4. FIRE AND EXPLOSION DATA Flash Point :N/A Method Used: N/A Flammable Limits in Air % By Volume: LEL= N/A Auto-Ignition Temperature: N/A UE L=N/A Extinguishing Media: USE MEDIA SUITABLE FOR SURROUNDING MATERIALS Special Fire Fighting Procedures: NO SPECIAL PROCEDURES REQUIRED Unusual Fire & Explosion Hazards: NONE KNOWN SECTION 5. REACTIVITY DATA Stability: NORMALLY STABLE USE CONDITIONS. Conditions to Avoid: NONE UNDER NORMAL Incapability - Materials to Avoid: STRONG OXIDIZERS Hazardous Polymerization: DOES NOT OCCUR Hazardous Decomposition Products: CARBON MOOXIDE, CARBON DIOXIDE SECTION 6. SPECIAL PRECAUTIONS AND SPILL, LEAK PROCEDURES Precautions To Be Taken In Handling And Storage:
RECOMMEND STORAGE BETWEEN 40 F (5 C) AND 100 F (37 C).
Steps To Be Taken In Case Material is Released Or Spilled:
CLEAN UP WITH ABSORBENT MATERIAL
Waste Disposal Methods: (Consult Federal, State and Local Regulations):
FLUSH WASTE TO SEWER WITH LARGE AMOUNTS OF WATER, IF PERMITTED BY LOCAL,
STATE AND FEDERAL REGULATIONS. THIS PRODUCT IS NOT A HAZARDOUS WASTE
UNDER CURRENT RCRA REGULATIONS.

PERSONAL PROTECTION-A (SAFETY GLASSES)

Note: THE SELECTION OF PERSONAL PROTECTIVE EQUIPMENT SHOULD BE MADE BY THE MATERIAL USER BASED ON THE PARTICULAR PLANT CONDITIONS WHERE THE MATERIAL IS TO BE USED TOGETHER WITH INFORMATION CONTAINED IN THE PRODUCT MSDS.

NE Means Not Established N/A Means Not Available THE INFORMATION ON THIS MATERIAL SAFETY DATA SHEET REPRESENTS THE LATEST DATA AND BEST OPINION AS TO THE PROPER USE AND HANDLING OF THIS PRODUCT UNDER NORMAL CONDITIONS. ANY USE OF THIS PRODUCT OR METHOD OF APPLICATION WHICH IS NOT IN CONFORMANCE WITH THIS DATA SHEET AND THE PRODUCT LABEL DIRECTIONS, IS THE RESPONSIBILITY OF THE USER. THIS MATERIAL SAFETY DATA SHEET WAS PREPARED TO COMPLY WITH THE OSHA HAZARD CUMMUNICATION REGULATION.

#### for

# Calcium Carbonate

# Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company

Ash Grove Cement Company 8900 Indian Creek Parkway

₽. O. Box 25900

Overland Park, KS 66225

Emergency Telephone Number: (913) 451-8900 Information Telephone Number: (913) 451-8900

Substance: Calcium Carbonate, Calcite, CaCO, Ground Limestone

(CAS No. 471-34-1), Ash Grove Grid Athletic Field

Marker, Lawn Lime, Mineral Filler

Chemical Family: Carbonate; weak inorganic base

Molecular Formula: Ca-C-0,

Date Prepared/Reviewed: May, 1991

# Section II - Hezardous Ingredients/Identity Information

Calcium Carbonate

CaCO,

osha pel

ACGIH TI

Nuisance particulate:

Total dust, 15 mg/M3

10 mg/M

Respirable fraction 5 mg/M3\*

\*Particulate not otherwise classified containing no asbestos and less than 1% crystalline silica

# Section III - Physical/Chemical Characteristics

Boiling Point: NA\*

Specific Gravity: 2.710

Vapor Pressure (mmHg): 0

Melting Point: Decomposes 900°C.

Vapor Density: (Air=1) NA

Evaporation Rate: 0 (1652 F)

Solubility in Water: .0014% (25°C)

Appearance and Odor: White powder or granules; No odor

\*NA = not applicable, solid material

# Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA\*
Flammable Limits: NA LEL: NA UEL: NA
Extinguishing Media: NA
Special Fire Fighting Procedures: NA
Pirefighting Media: NA

Unusual Fire and Explosion Mazards: None \*NA = not applicable, incombustible solid

# Section V - Reactivity Data

Stability: Stable under normal temperatures and pressures.

Incompatibility (Materials to avoid): Vigorous release of carbon dioxide when contacted with strong acids. Reacts violently with fluorine gas.

Hazardous Decomposition or By-Products: When heated at temperatures above 900°C (1652°F) carbon dioxide is liberated thereby forming calcium oxide.

Hazardous Folymerization: Does not polyermize.

# Section VI - Health Hazard Data

Route(s) of Entry: Inhalation; eyes
Acute exposure: No known effects
Chronic exposure: No known effects
First aid: Eyes - treat as any inert foreign object

OSHA Regulated: Yes - See OSHA PEL in Section II

Medical Conditions Generally Aggravated by Exposure: NA

Section VII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled:

Pick up spilled powder avoiding dusting conditions. Can be disposed as non-hazardous waste or reused. Wet sweeping may be used to avoid dusting. Residues can be flushed with water. Large quantities should not be flushed to surface waters or sewers.

Precautions to be Taken in Handling and Storing:

Handling: Avoid generation of excessive dust.

Storing: Protect against physical damage and store in dry place only to preserve product integrity.

#### Section VIII - Control Measures

Ventilation: Provide local exhaust ventilation or general dilution ventilation to meet permissible exposure limits for particulates.

Respirator: In dusty environments, the use of a MSHA/NIOSH approved respirator for particulates is recommended.

Firefighting: NA

Eye Protection: Exposed individuals should wear tight fitting goggles in dusty areas.

# SARA TITLE III SECTION 313 AND 40 CFR Part 372 TOXIC CHEMICAL NOTIFICATION SHEET

#### ELMER'S GLUE-ALL

This product contains the following toxic chemical(s) subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986, and Subpart C-Supplier Notification Requirement of 40 CFR Part 372.

CAS Registry Number Cl

Chemical Name

Pct. By Weight

None required per SARA TITLE III SECTION 313

This Toxic Chemical Notification Sheet must not be detached from the Material Safety Data Sheet (MSDS). Any copying and redistribution of the MSDS shall include copying and redistribution of this notification sheet attached to copies of the MSDS subsequently redistributed.

060 E371NR

PRINT DATE: 21-Jun-91 09:14 AM

#### DISCLAIMER

SELLER MAKES NO WARRANTY EXPRESS OR IMPLIED, CONCERNING THE PRODUCT OR THE MERCHANTABILITY OR FITNESS THEREOF FOR ANY PURPOSE OR CONCERNING THE ACCURACY OF ANY INFORMATION PROVIDED BY BORDEN, except that the product shall conterm to contracted specifications, and that the product does not infringe any valid United States patent. The information provided herein was believed by Borden to be accurate at the time of preparation or prepared from sources believed to be reliable, but it is the responsibility of the user to investigate and understand other pertinent sources of information, to comply with all laws and procedures applicable to the safe handling and use of product and to determine the suitability of the product for its intended use. Buyer's exclusive remedy shall be for damages and no claim of any kind, whether as to product delivered or for non-delivery of product, and whither based on contract, breach of warranty, negligence or otherwise shall be greater in amount than the purchase price of the quantity of product in respect of which damages are claimed. In no even shall Seiler be liable for incidental or consequential damages, whether Buyer's claim is based on contract, breach of warranty, negligence or otherwise.



# MATERIAL SAFETY DATA SHEET

Emergency Telephone (614) 431-6600

Borden, Inc.

Consumer Producta Division

180 EAST BROAD STREET, COLUMBUS, OHIO, 43215

THE OSHA HAZARD COMMUNICATION STANDARD 29 CFR 1910.1200 REQUIRES THAT THE INFORMATION CONTAINED ON THESE SHEETS BE MADE AVAILABLE TO YOUR WORKER INSTRUCT YOUR WORKERS TO HANDLE THIS PRODUCT PROPERLY.

ATTN: SAFETY DIRECTOR NON-EMERGENCY TELEPHONE 800-848-9400 (MSDS, ORDERS) 614-431-6680 (TECH. INFO) DESCRIPTION: ELMER'S GLUE-ALL PAGE PRODUCT TYPE: PVAC BASED ADHESIVE CUR ISS 21-JUN-9. APPLICATION: E371NR, E372NR, E375NR, E379NR, E384NR, E395NR. 받님님귳*딦테를 짜존*,학원리장炎긏귳훃롲훆켂됮짟녿ñque 보석kkkkkkkk 등 로드트트 파매용장한 성당된 등록 등 등는 등 등 등 등 등 등 등 등 등 등 등 등 다리 드리 ( SIGNAL WORD This material is not a "health hazard" or a "physical hazard" as determined when reviewed according to the requirements of the Occupational Safety and Health Administration 29 CFR Part 1910.1200 "Hazard Communication" Standard. CHEMICAL HAZARD RATING HEALTH#0(least) FIRE=0(least) REACTIVITY=0(least) 

29CFR1910.1200 HAZARDOUS INGREDIENTS/REPORTED HEALTH EFFECTS

뼥뼥찞찞궦궦궦궦궦궦궦궦쯗쯗믔쯗믮뽰뽰눑믮륟믶륟륟믇뇶댎첉뽰컜찞듔찞찞찞뽰뽰쿒æææ퉦둮궦펖댎뫮쨢뭙햊쐒퍞삠륟륟æ뺽첉췙궦æœ쨢펺쨢됈첉

CAS/REGISTRY NO. MATERIAL DESCRIPTION 

None known to Borden.

PHYSICAL DATA PERCENT VOLATILES 56 pH AT 25 C 4.7 SPECIFIC GRAVITY 1.08 APPEARANCE MILKY WHITE LIQUID AUTOIGNITION TEMPERATURE NOT AVAILABLE BOILING POINT 100 DEGREES C VAPOR DENSITY (AIR=1) < 1 VAPOR PRESSURE, MM HG @ 20 DEG C 17.5 EVAPORATION RATE (BUTYL ACETATE=1) < 1 UP/LOW FLAMMABLE LIMITS NOT APPLICABLE FLASH POINT NOT APPLICABLE FREEZING POINT 0 DEGREES C ODOR MILD ACETIC AROMA ODOR THRESHOLD, PPM NOT AVAILABLE SOLUBILITY IN WATER DISPERSIBLE VOC CALCULATED 33 GM/L COEFFICIENT OF WATER/OIL DISTRIB. NOT AVAILABLE

READ NEXT PAGE



COT TO SK COOD

# MATERIAL SAFETY DATA SHEET

Emergency Telephone (614) 431-6600

Borden, Inc.

Consumer Products Division

180 BAST BROAD STREET, COLUMBUS, OHIO, 43215

DESCRIPTION: ELMER'S GLUE-ALL

PAGE 2 CUR ISS 21-JUN-91

PRODUCT TYPE: PVAC BASED ADHESIVE APPLICATION: E371NR, E372NR, E375NR, E379NR, E384NR, E395NR.

IMMEDIATE HEALTH HAZARD DATA

SKIN ABSORPTION: Not toxic dermally when tested as described in 16 CFR Part 1500.3 (c) (1) and (2).

INGESTION: Not toxic orally when tested as described in

16 CFR Part 1500.3 (c) (1) and (2).

TNHALATION: Not toxic by inhalation when tested as described in 16 CFR Part 1500.3 (c) (1) and (2). SKIN: Not an irritant when tested as described in

16 CFR Part 1500.41.

EYES: Not an irritant when tested as described in

16 CFR Part 1500.42.

2.让让什么儿儿儿们和解解的情况,我们还是这样就是是我们们们的一个,我们们的一个,我们就会会会被被不要的我们的,我们就会会会会会会会会会会会会会会会会会会会会会

HANDLING PRECAUTIONS

Handle in accordance with good industrial hygiene and safety practices.

EMERGENCY AND FIRST AID PROCEDURES

INGESTION: If accidently swallowed, dilute by drinking large quantities of water. Immediately contact poison control center or hospital emergency room for any other additional treatment directions.

EYE CONTACT: Immediately flush eyes with plenty of water. Call a physician if irritation persists.

FIRE AND EXPLOSION HAZARD DATA

Will not burn unless water has evaporated. In case of fire, water should be used to keep fire-exposed containers cool.

REACTIVITY DATA

Normally stable as defined in NFPA 704-12(4-3.1).

Hazardous polymerization:

Will not occur.

Incompatibilities:

Strong acids and alkaline materials.

Other Hazards:

None known to Borden.

Decomposition products may include:

CO, CO2.

CONTROL MEASURES

No special control measures necessary under normal conditions of use.

PERSONAL PROTECTION INFORMATION

No special protection necessary.

。 Manual Manua

READ NEXT PAGE



COT TO BE GOOD

# MATERIAL SAFETY DATA SHEET

Emergency Telephone (614) 431-6600

Borden, Inc.

Consumer Products Division

180 EAST BROAD STREET, COLUMBUS, OHIO, 43215

DESCRIPTION: ELMER'S GLUE-ALL

PAGE

PRODUCT TYPE: PVAC BASED ADHESIVE CUR ISS 21-JUN-9

都是他已经会遇我<mark>的复数形式,我是要要要要要要要要</mark>是是这种的。

APPLICATION: E371NR, E372NR, E375NR, E379NR, E384NR, E395NR.

SPILL OR LEAK PROCEDURES

Soak up with absorbent material and remove to a

chemical disposal area.

Prevent entry into natural bodies of water.

WASTE DISPOSAL

Recover free liquid. Absorb residue and dispose of according to local, state/provincial, and federal

requirements. . 1. 不可以不是是是国家的最后的现在分词,我们就是是国家的国家的是是是国家的国家的是是这种的国家的,我们就是这种国家的国家的,我们可以完全的证据,我们可以让我们

STORAGE PRECAUTIONS

Keep from freezing.

Store in a cool, dry place. Keep containers tightly closed. 

DOT CLASSIFICATION

Not Regulated.

这样就就是我们在这种的,我们也是我们的,我们就是我们的,我们们还是我们的,我们们的人,我们们的人,我们们们的人,我们们们的人,我们们们的人,我们们们们的人,我们 060 E371NR PREVIOUS ISSUE:

CURRENT ISSUE: 21-JUN-91

PRINT DATE: 21-Jun-91 09:14 AM

THIS IS THE LAST PAGE

# SARA TITLE III SECTION 313 AND 40 CFR Part 372 TOXIC CHEMICAL NOTIFICATION SHEET

#### ELMER'S GLUE-ALL

This product contains the following toxic chemical(s) subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986, and Subpart C-Supplier Notification Requirement of 40 CFR Part 372.

CAS Registry

Number Chemical Name

Pct. By Weight

None required per SARA TITLE III SECTION 313

This Toxic Chemical Notification Sheet must not be detached from the Material Safety Data Sheet (MSDS). Any copying and redistribution of the MSDS shall include copying and redistribution of this notification sheet attached to copies of the MSDS subsequently redistributed.

060 E371NR

PRINT DATE: 21-Jun-91 09:14 AM

# DISCLAIMER

SELLER MAKES NO WARRANTY, EXPRESS OR IMPLIED, CONCERNING THE PRODUCT OR THE MERCHANTABILITY OR FITNESS THEREOF FOR ANY PURPOSE OR CONCERNING THE ACCURACY OF ANY INFORMATION PROVIDED BY BORDEN, except that the product shall conform to contracted specifications, and that the product does not infringe any valid United States patent. The information provided herein was believed by Borden to be accurate at the time of preparation or prepared from sources believed to be reliable, but it is the responsibility of the user to investigate and understand other perfinent sources of information, to comply with all laws and procedures applicable to the safe handling and use of product and to determine the suitability of the product for its intended use. Buyer's exclusive remedy shall be for demagos and no claim of any kind, whether as to product delivered or for non-delivery of product, and whether based on contract, breach of warranty, negligence or otherwise shall be greater in amount than the purchase price of the quantity of product in respect of which damages are claimed. In no event shall Seller be liable for incidental or consequential damages, whether Buyer's claim is based on contract, breach of warranty, negligence or otherwise.



# **Material Safety Data Sheet**

### CHEVRON Dura-Lith Grease EP NLGI 2

CPS254595

Page 1 of 6

PRIESTLEY OIL & CHEMICAL 3907475
CO., INC.
P O BOX 12570
PORTLAND, OR 97212

MATERIAL ORDERED FOR: PACKAGE PICK-UP W.B. FOB WILLBRIDGE PORTLAND, OR 97210

Print Date: July 05, 1991

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated in your MSDS.

This is a new Material Safety Data Sheet.

#### 1. PRODUCT IDENTIFICATION

#### CHEVRON Dura-Lith Grease EP NLGI 2

- A HAZARD WARNING IS NOT REQUIRED FOR THIS PRODUCT UNDER OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200)

PRODUCT NUMBER(S): CPS254595

PRODUCT INFORMATION: (800)582-3835

Revision Number: 0 Revision Date: 02/01/91 MSDS Number: 004698

NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200) by the Chevron Environmental Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

# 2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (415)233-3737

#### EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

#### SKIN CONTACT:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

Note to Physician: Injection under the skin of materials similar to this product is associated with accidents involving high-pressure equipment. When ejected from this type of equipment, the material can easily penetrate the skin and leave a small, sometimes bloodless, puncture wound. Yet, because of its driving force, material injected into a fingertip can be deposited into the palm of the hand. Within 24 hours, there is usually a great deal of swelling, discoloration, and intense throbbing pain in the affected part. Immediate treatment at surgical emergency center is recommended.

#### INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

#### INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

# 3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

#### EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

#### SKIN IRRITATION:

This substance is not expected to cause prolonged or significant skin irritation. This hazard evaluation is based on data from similar materials.

### DERMAL TOXICITY:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

High-Pressure Equipment Information: Accidental high-velocity injection under the skin of materials of this type may result in serious injury. Seek medical attention at once should an accident like this occur. The initial wound at the injection site may not appear to be serious at first; but, if left untreated, could result in disfigurement or amputation of the affected part.

#### RESPIRATORY/INHALATION:

Revision Number: 0 Revision Date: 02/01/91 MSDS Number: 004698

NDA - No Data Available NA - Not Applicable

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

# 4. PROTECTIVE EQUIPMENT

#### EYE PROTECTION:

No special eye protection is usually necessary.

#### SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.

# RESPIRATORY PROTECTION:

No special respiratory protection is normally required.

#### **VENTILATION:**

No special ventilation is necessary.

#### 5. FIRE PROTECTION

FLASH POINT: NA AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, dry chemical, foam and water fog.

NFPA RATINGS: Health 0; Flammability 1; Reactivity 0; Special NDA; HMIS RATINGS: Health 0; Flammability 1; Reactivity 0; Other NDA; (Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

#### FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

#### COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur, nitrogen and phosphorous. Incomplete combustion can produce carbon monoxide.

#### 6. STORAGE, HANDLING, AND REACTIVITY

#### HAZARDOUS DECOMPOSITION PRODUCTS:

Revision Number: 0 Revision Date: 02/01/91 MSDS Number: 004698

NDA - No Data Available NA - Not Applicable

NA.

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates,

peroxides, etc.

SPECIAL PRECAUTIONS:

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently.

#### 7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Smooth amber grease.

BOILING POINT: NA
MELTING POINT: NA
EVAPORATION: NA
SPECIFIC GRAVITY: NDA
VAPOR PRESSURE: NA

PERCENT VOLATILE (VOLUME %): NA

VAPOR DENSITY (AIR=1): NA

VISCOSITY: 12 cSt @ 100C (Min.)

### 8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour). SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problem.

Clean up spills immediately.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

# 9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This substance is subject to the provisions of the Pennsylvania Worker and Community Right-to-Know Act. Specific chemical identities are trade secret under the provisions of 35 Pennsylvania Statute Section 7311.

Revision Number: 0 Revision Date: 02/01/91 MSDS Number: 004698

NDA - No Data Available NA - Not Applicable

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

# PERCENT/CAS# COMPONENT/REGULATORY LIMITS

100.0 %

CHEVRON Dura-Lith Grease EP NLGI 2

#### CONTAINING

#### LUBRICATING BASE OIL

The BASE OIL may be a mixture of any of the following: CAS 64741884, CAS 64741895, CAS 64741964, CAS 64741975, CAS 64742014, CAS 64742525, CAS 64742536, CAS 64742547, CAS 64742627, CAS 64742650, CAS 72623837.

AND

CASTOR OIL, HYDROGENATED

#### CAS8001783

#### < 5.0 % ADDITIVES

TLV - Threshold Limit Value

TWA - Time Weighted Average

STEL - Short-term Exposure Limit

TPQ - Threshold Planning Quantity

RQ - Reportable Quantity

CPS - CUSA Product Code

CC - Chevron Chemical Company

CAS - Chemical Abstract Service Number

# 10. REGULATORY INFORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE

FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES:

- 1. Immediate (Acute) Health Effects; NO
- 2. Delayed (Chronic) Health Effects; NO
- 3.

- Fire Hazard: NO
- 4. Sudden Release of Pressure Hazard; NO
- 5.

NDA - No Data Available

Reactivity Hazard; NO

NA - Not Applicable

None of the components of this material are found on the regulatory lists shown below.

#### REGULATORY LISTS SEARCHED:

01=SARA 313 ·	02=MASS RTK ·	03=NTP Carcinogen
04=CA Prop. 65	05=MI 406	06=IARC Group 1
07=IARC Group 2A	08=IARC Group 2B	09=SARA 302/304
10=PA RTK	11=NJ RTK	12=CERCLA 302.4
13=MN RTK	14=ACGIH TLV	15=ACGIH STEL
16=ACGIH Calculated TLV	17=OSHA TWA	18=OSHA STEL
19=Chevron TLV	20=EPA Carcinogen	21=TSCA Sect 4(e)

Revision Number: 0 Revision Date: 02/01/91 MSDS Number: 004698

22=TSCA Sect 5(a)(e)(f) 23=TSCA Sect 6 24=TSCA Sect 12(b) 25=TSCA Sect 8(a) 26=TSCA Sect 8(d) 27=TSCA Sect 8(e) 28=Canadian WHMIS 29=OSHA CEILING 30 = TSCA Sect 8 FYI

# 11. PRODUCT TOXICOLOGY DATA

#### EYE IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

# SKIN IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

#### DERMAL TOXICITY:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

#### RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

#### INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

#### 12. ADDITIONAL HEALTH DATA

#### ADDITIONAL HEALTH DATA COMMENT:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

\*

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

MSDS Number: 004698 Revision Number: 0 Revision Date: 02/01/91 NDA - No Data Available

NA - Not Applicable

ŧ.

#### 7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Dark green viscous liquid.

BOILING POINT: NA MELTING POINT: NA EVAPORATION: NA

SPECIFIC GRAVITY: 0.89 @ 15.6/15.6C

VAPOR PRESSURE: NA

PERCENT VOLATILE (VOLUME %): NA

VAPOR DENSITY (AIR=1): NA VISCOSITY: 141 cst @ 400

# 8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

# CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour). SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problems other than those associated with oil spills.

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

#### DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

# 9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

#### COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m3, the OSHA PEL is 5 mg/m3.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

#### PERCENT/CAS# COMPONENT/REGULATORY LIMITS

Revision Number: 0 Revision Date: 02/01/91 MSDS Number: 004706

NDA - No Data Available NA - Not Applicable

1

minimized by wearing protective clothing.

#### RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standards, the use of an approved respirator is required.

#### VENTILATION:

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

# 5. FIRE PROTECTION

FLASH POINT: (COC) 399F (204C) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam and Water Fog.

NFPA RATINGS: Health 0; Flammability 1; Reactivity 0; Special NDA; HMIS RATINGS: Health 0; Flammability 1; Reactivity 0; Other NDA; (Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

#### FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

# COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur, nitrogen and phosphorous. Incomplete combustion can produce carbon monoxide.

### 6. STORAGE, HANDLING, AND REACTIVITY

#### HAZARDOUS DECOMPOSITION PRODUCTS:

NDA

STABILITY:

Stable.

### HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

#### INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

### SPECIAL PRECAUTIONS:

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or explosion may result.

Revision Number: 0 Revision Date: 02/01/91 MSDS Number: 004706 NDA - No Data Available NA - Not Applicable

X-00S021 (01-8)

No product toxicology data available. The hazard evaluation was based on data from similar materials.

#### SKIN IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

#### DERMAL TOXICITY:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

#### RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

#### INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

#### 12. ADDITIONAL HEALTH DATA

#### ADDITIONAL HEALTH DATA COMMENT:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

\*\*\*\*\*\*\*\*\*\*\*\*\*

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 0 Revision Date: 02/01/91 MSDS Number: 004706

NDA - No Data Available NA - Not Applicable

100.0 % CHEVRON Gear Compound EP ISO 150

#### CONTAINING

j.

> 97.0 % LUBRICATING BASE OIL

The BASE OIL may be a mixture of any of the following: CAS 64741884, CAS 64741895, CAS 64741964, CAS 64741975, CAS 64742014, CAS 64742525, CAS 64742536, CAS 64742547, CAS 64742627, CAS 64742650, CAS 72623837.

#### < 3.0 % ADDITIVES

TLV - Threshold Limit Value TWA - Time Weighted Average

STEL - Short-term Exposure Limit TPQ - Threshold Planning Quantity

RQ - Reportable Quantity CPS - CUSA Product Code

CC - Chevron Chemical Company CAS - Chemical Abstract Service Number

# 10. REGULATORY INFORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE

FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES: 1. Immediate (Acute) Health Effects; NO

2. Delayed (Chronic) Health Effects; NO

3. Fire Hazard; NO

4. Sudden Release of Pressure Hazard; NO

5. Reactivity Hazard; NO

None of the components of this material are found on the regulatory lists shown below.

#### REGULATORY LISTS SEARCHED:

01=SARA 313	02=MASS RTK	03=NTP Carcinogen
04=CA Prop. 65	05=MI 406	06=IARC Group 1
07=IARC Group 2A	08=IARC Group 2B	09=SARA 302/304
10=PA RTK	ll=NJ RTK	12=CERCLA 302.4
13=MN RTK	14=ACGIH TLV	15=ACGIH STEL
16=ACGIH Calculated TLV	17=OSHA TWA	18=OSHA STEL
19=Chevron TLV	20=EPA Carcinogen	21=TSCA Sect 4(e)
22=TSCA Sect 5(a)(e)(f)	23=TSCA Sect 6	24=TSCA Sect 12(b)
25=TSCA Sect 8(a)	26=TSCA Sect 8(d)	27=TSCA Sect 8(e)
28=Canadian WHMIS	29=OSHA CEILING	30=TSCA Sect 8 FYI

# 11. PRODUCT TOXICOLOGY DATA

#### EYE IRRITATION:

Revision Number: 0 Revision Date: 02/01/91 MSDS Number: 004706

NDA - No Data Available NA - Not Applicable

# 2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (415)233-3737

#### EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

#### SKIN CONTACT:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

#### INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

#### INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

# 3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

#### EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

#### SKIN IRRITATION:

This substance is not expected to cause prolonged or significant skin irritation. This hazard evaluation is based on data from similar materials.

#### DERMAL TOXICITY:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

#### RESPIRATORY/INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.

#### INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

#### 4. PROTECTIVE EQUIPMENT

# EYE PROTECTION:

No special eye protection is usually necessary.

# SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be

Revision Number: 0 Revision Date: 02/01/91 MSDS Number: 004706 NDA - No Data Available NA - Not Applicable

X-D0S021 (01-8



# **Material Safety Data Sheet**

# CHEVRON Gear Compound EP ISO 150

CPS255068

Page 1 of 6

PRIESTLEY OIL & CHEMICAL 3907475 CO., INC. P O BOX 12570

PORTLAND, OR 97212

MATERIAL ORDERED FOR: PACKAGE PICK-UP W.B. FOB WILLHRIDGE PORTLAND, OR 97210

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated in your MSDS.

This is a new Material Safety Data Sheet.

# 1. PRODUCT IDENTIFICATION

CHEVRON Gear Compound EP ISO 150

- A HAZARD WARNING IS NOT REQUIRED FOR THIS PRODUCT UNDER OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200)

PRODUCT NUMBER(S): CPS255068
PRODUCT INFORMATION: (800)582-3835

Revision Number: 0 Revision Date: 02/01/91 MSDS Number: 004706

NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200) by the Chevron Environmental Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.